F·A·A·M facility for airborne atmospheric measurements

FLIGHT FOLDER

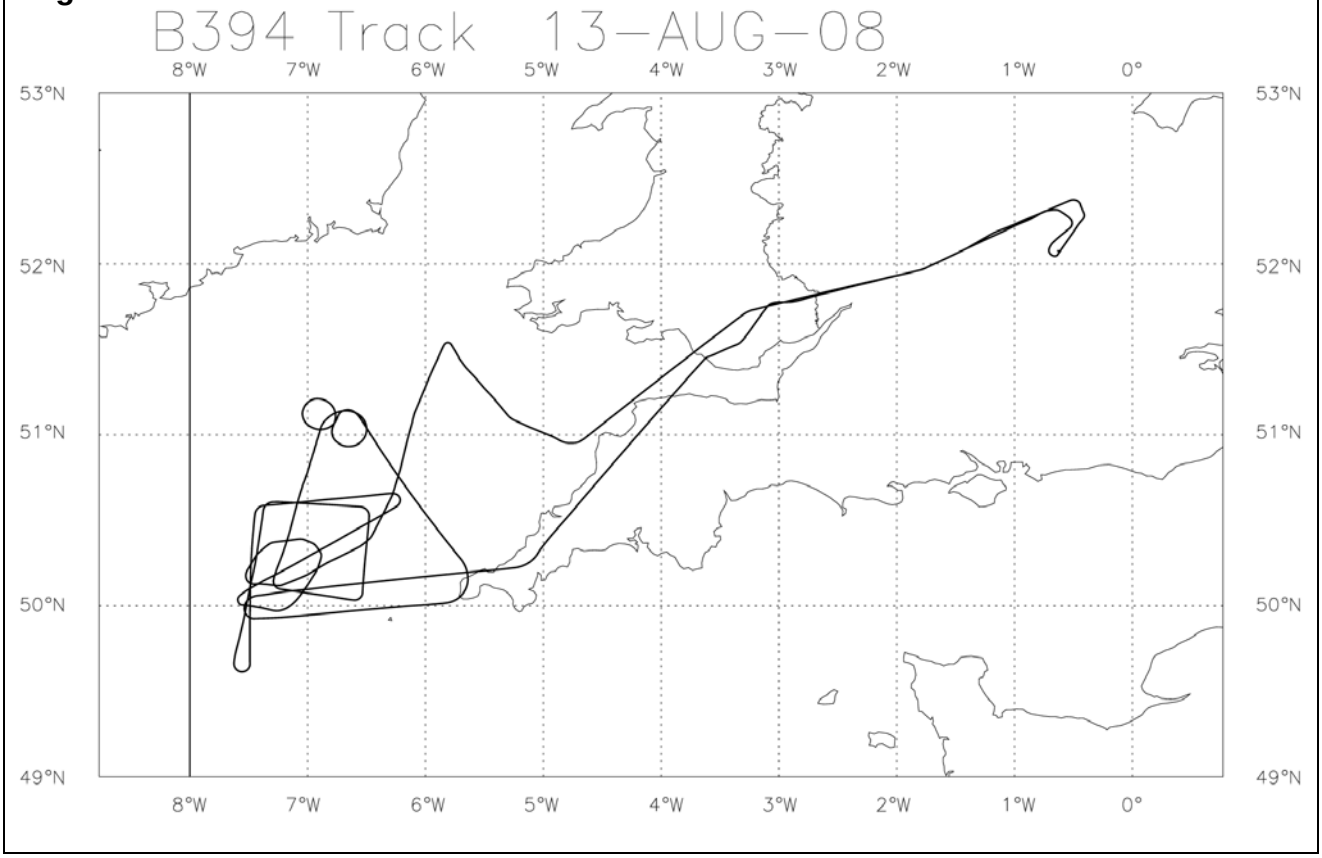
Flight No.	B394
Date:	13 Aug 2008
Take Off:	09:56:59
Landing:	15:05:30
Flight Time	5h 08m 31s

Campaign: Test Flying

Operating Area: SW Approaches

POB	Position	Name	Institute	Logs y/n
1	Captain	Alan Roberts	Directflight	
2	Co-pilot	Ian Ramsay-Rae	Directflight	
3	CCM1	Dawn Quinn	Directflight	
4	Mission Scientist	Stuart Newman	Met Office	
5	Mission Scientist II	Andreas Keil	Met Office	
6	Flight Manager	Alan Woolley	FAAM	
7	Cloud Physics	Martyn Pickering	Met Office	
8	Core Chem / AVAPS / CCM2	Doug Anderson	FAAM	
9	Aries	Alan Vance	Met Office	
10	MARRS / DEIMOS	Rob King	Met Office	
11	SWS / SHIMS	Jeff Norwood-Brown	Met Office	
12	Wet Neph / FWVS	Andy Wilson	Met Office	
13	CVI	Paul Barrett	Met Office	
14	TAFTS	Paul Green	Imperial College	
15	TAFTS	Ralph Beeby	Imperial College	
16	Observer	Mark Griffith	Met Office	
17				
18				

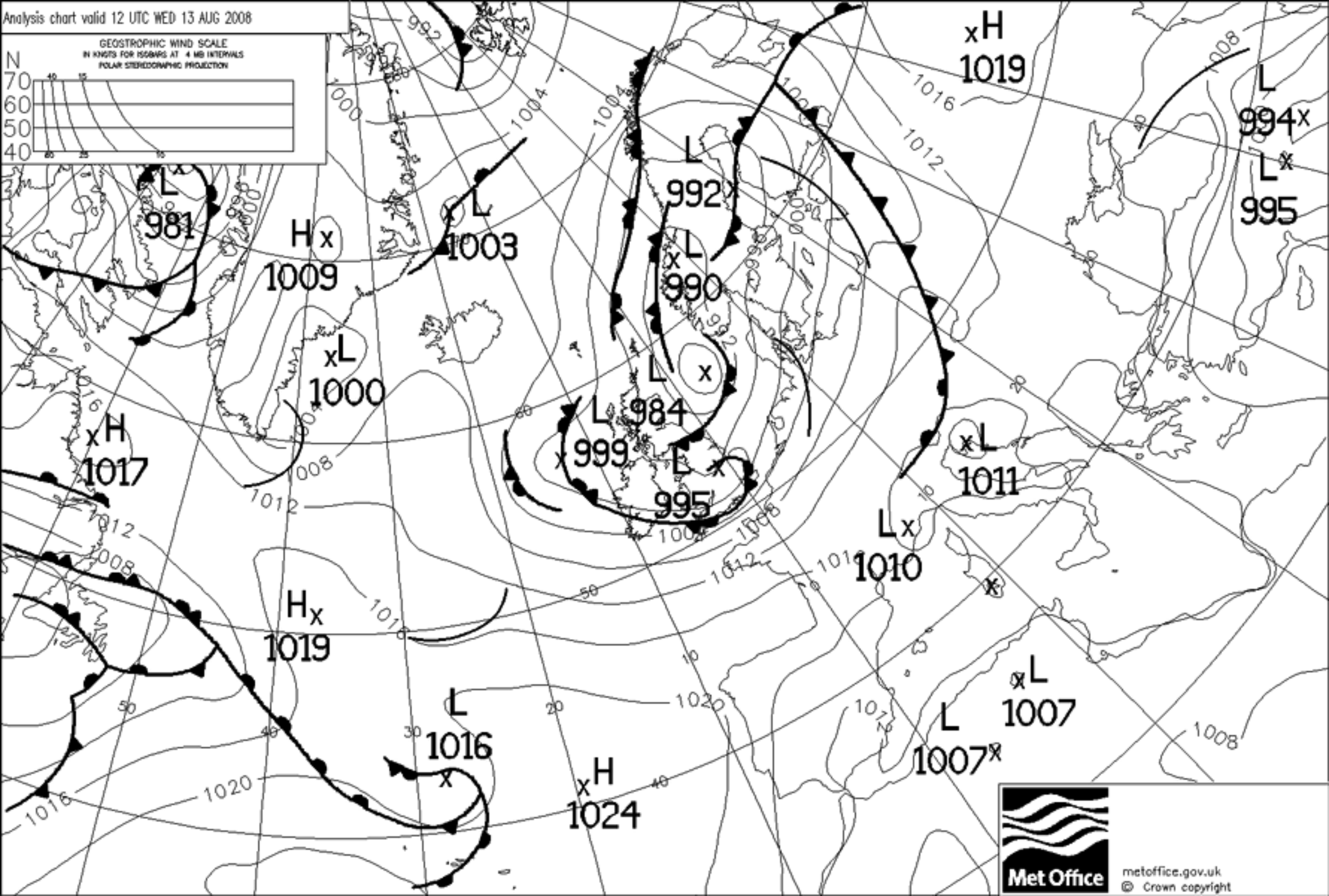
Flight Track:



FLIGHT SUMMARY

Flight No B394
Date: 13/8/08
Project: Test Flying
Location: SW Approaches

Start Time	End Time	Event	Height (s)	Hdg	Comments
094617		Engine Start	0.81 kft	128	
094941		Power Change	0.81 kft	126	
095008		Taxy	0.81 kft	125	
095659		T/O	0.80 kft	212	
100543	100750	Run 1.1	10.0 kft	240	195kts
100905	101110	Run 1.2	10.0 kft	244	240kts
101247	101456	Run 1.3	10.0 kft	243	290kts
101552		jw/nevz	12.0 kft	256	zero
102953	104248	Profile 1	18.0 - 5.0 kft	234	
104249	110257	Run 2.1	5.0 kft	238	
110511	110959	Run 2.2	5.0 kft	209	acc/dec/acc run sci to 250 to min to 250
111008	112437	Run 2.3	5.0 kft	209	dec/acc run 250 to min to sci
112640	113652	Profile 2	5.0 - 0.29 kft	248	
113612		QNH	0.51 kft	276	1007
113658	114720	Profile 3	0.31 - 8.0 kft	273	
114720	115731	Run 3.1	8.0 kft	200	
115850	122129	Profile 4	8.0 - 28.0 kft	044	
120156		BBRs Covered	10.8 kft	057	
121115		Profile 4	20.0 kft	056	interrupt
121256		Profile 4	20.0 kft	267	resume
122230	123231	Run 4.1	28.0 kft	188	crosswind 1
123431	124431	Run 4.2	28.0 kft	000	crosswind 2
124538	125039	Run 5.1	28.0 kft	089	cross sun
125143	125644	Run 5.2	28.0 kft	183	into sun
125748	130250	Run 5.3	28.0 kft	276	cross sun
125812		bbrs	28.0 kft	278	exposed
130402	130903	Run 5.4	28.0 kft	012	down sun
130927		yaws	28.0 kft	013	
131330		yaws end	28.0 kft	013	
131417	132128	Orbit 1	28.1 - 27.9 kft	027	yawing
132215	132827	Orbit 2	28.1 kft	353	yaws
133020	134614	Profile 5	28.0 - 35.1 kft	147	into wind
133308		Contrails	30.4 kft	147	intermittent
134615	135617	Run 6.1	35.1 kft	265	into wind
135835	141131	Run 6.2	35.1 kft	084	
140626		Sonde 1	35.1 kft	084	gone
141058		Waypoint	35.1 kft	083	Camborne
141307	142807	Profile 6	35.1 - 16.1 kft	030	
150530		Land	0.70 kft	212	Cranfield


Analysis chart valid 12 UTC WED 13 AUG 2008
GEOSTROPHIC WIND SCALE
IN KNOTS FOR ISOBARS AT 4 MB INTERVALS
POLAR STEREOGRAPHIC PROJECTION
N
70
60
50
40
40
15
60
25
10
L 981
H 1009
L 1003
L 1000
H 1017
H 1019
L 1016
H 1024
L 992
L 990
L 984
L 999
L 995
H 1019
L 994
L 995
L 1011
L 1010
L 1007
L 1007
1000
1004
1008
1012
1016
1020
1024
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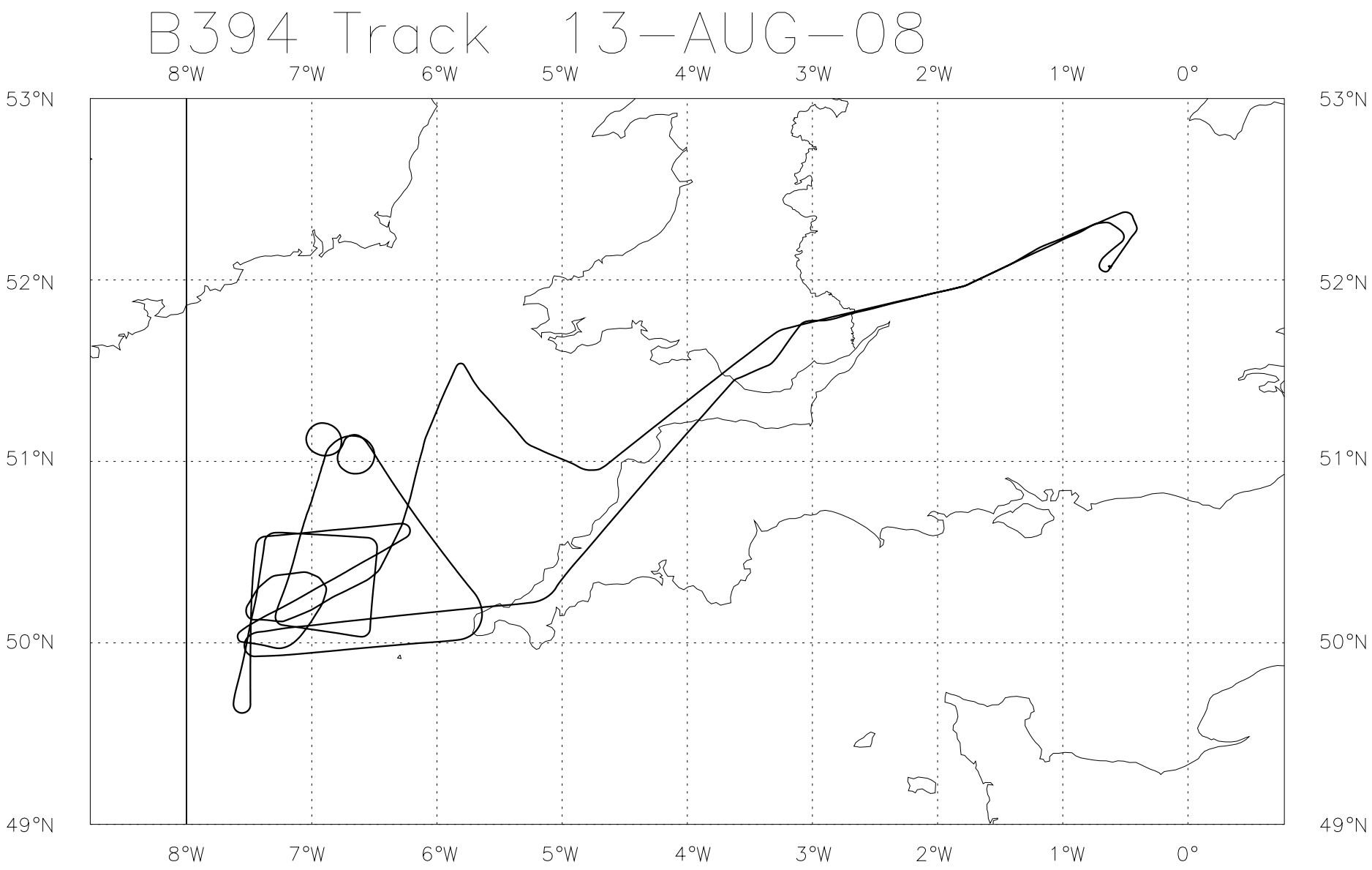
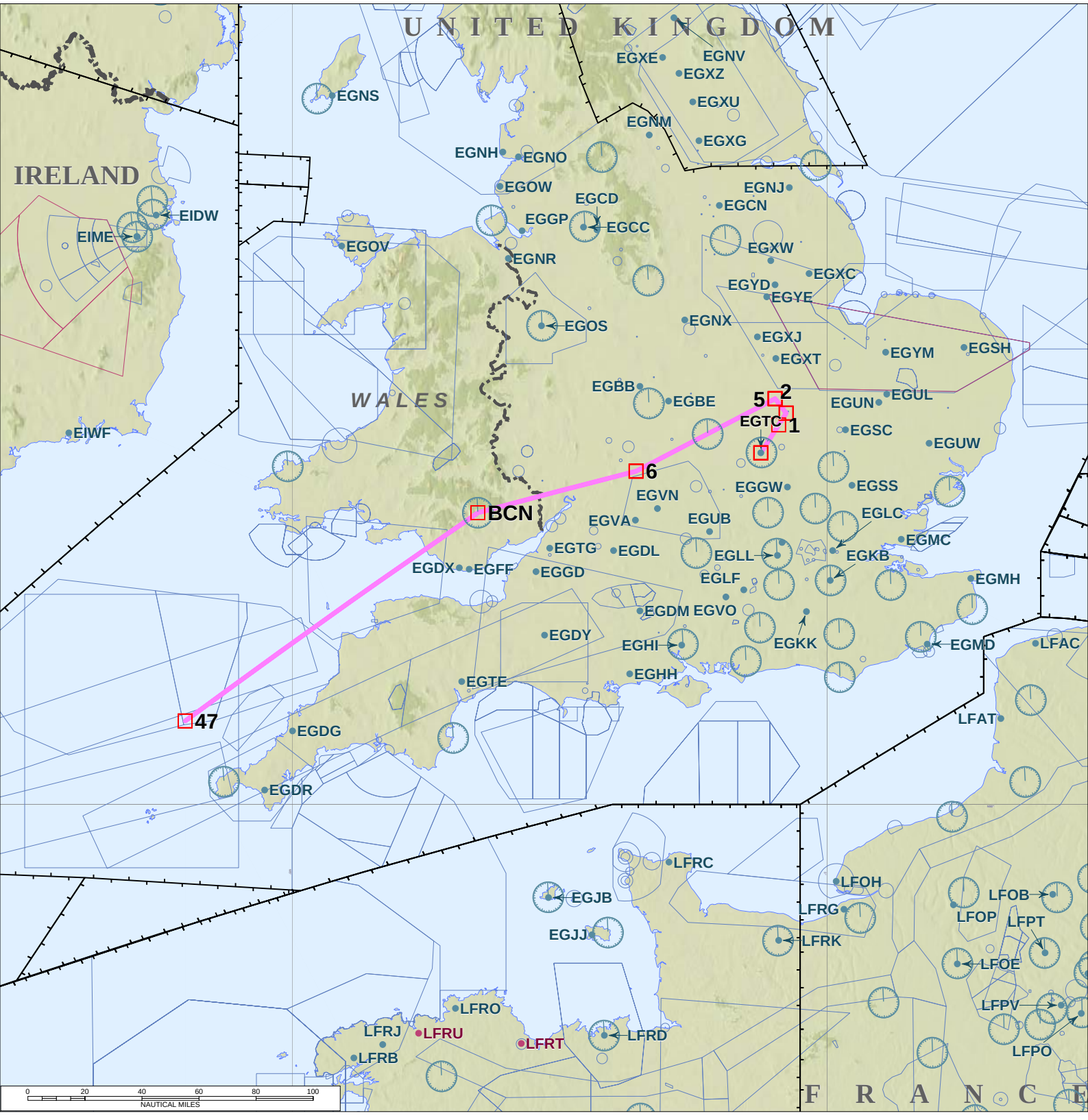
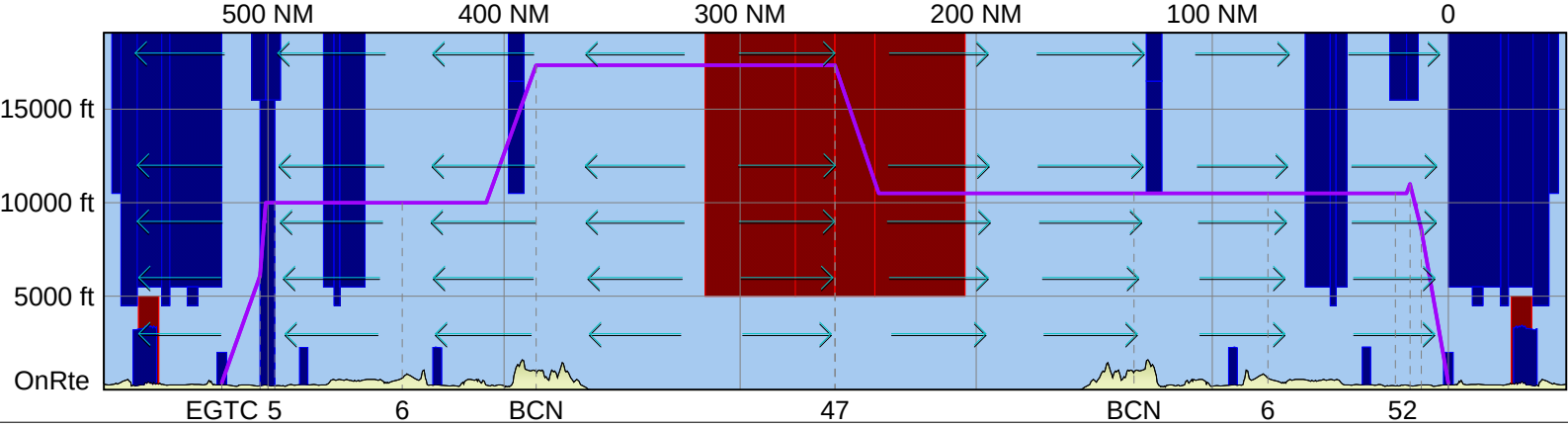

B394 Track 13-AUG-08
8°W
7°W
6°W
5°W
4°W
3°W
2°W
1°W
0°
53°N
52°N
51°N
50°N
49°N

EGTC -> EGSC (Page 1 of 1)
NavData Cycle 2008-8 Expires: Thursday, 28 August 2008.
Scale: 1:3364761 (1 inch = 46.15 naut mi). Printed on 12 Aug 2008

76996;68
FliteStar 9.4.1.0





Instrument Test Flight Sortie Brief

Wed 13/08/08
B394
Aim:

To test instruments are operational and check their performance under particular conditions.

Overall weather conditions:
Ideally sheet of StCu with clear skies above. Must be completely clear above FL280.

Instrument test requirements:

ARIES
One 10 min run below FL100 (5000' or below preferred where it is warm) in clear sky with clear sky either below and/or above. One or more 10 min runs at approx. FL280 and one or more 10 min run at max. alt., both in clear sky with clear sky either below and/or above. If a choice must be made between high and low level cloud, clear sky above is preferred in all cases as problems will show up sooner in zenith views.

TAFTS
TAFTS require checks on their operation and data quality. High level (FL280 or greater) runs required, ideally with a cirrus signature above or below the aircraft (min of 2 for 10 mins).

SWS
Measurement of effect of Solar flaring on SWS window. Several measurements of radiance at different angles away from the Sun to check when the flaring starts to become a problem (~40deg?). On a clear sky day this can be performed on the ground at Cranfield.

Upper SHIMS
Upper SHIMS calibration by performing pirouette on the ground in clear sky conditions.
Also a high level box pattern. 2 minute legs are sufficient.

UPPER BBRs
Upper BBR calibration by performing pirouette on the ground in clear sky conditions, and by collecting data on the ground in clear sky for comparison with data from Cardington BBRs
Also a high level box pattern. 5 minute legs are sufficient if there are no height changes, but the aircraft should be at the operating height for 5 minutes before commencement of the pattern. This work can be combined with the Upper SHIMS work above.

MARSS/Deimos
Deimos should be fitted in zenith configuration. SLR to be performed at high level (>FL280, the higher the better) under clear skies of at least 10 mins, repeated if possible.

CVI
Check performance by flying through uniform cloud (StCu) – 2*10mins (more) if possible.
A profile to max altitude to determine sample flow performance would be useful.

CIP/PIP (if available)
Check operation by flying through StCu and Ci.

FFSSP

Check operation by flying through StCu

Buck-hygrometer
Check operation in all conditions. Profile (interrupted if necessary) from min to FL350, at standard climb rates. 10 min S&L run FL350 with dropsonde, to compare Buck/Ge/Sonde humidity, plus AVAPS training.
Ideally long duration at FL350 to see how the instrument copes with the cold, plus intercepting dry/wet and wet/dry interfaces.
If dry layer identified during profile, 5 min saw-tooth run through it to test Buck response.
Fast profile descent (1500ft/min, reducing to 1000ft/min in boundary layer) to 200ft.
Weather conditions: humidity profile with lots of structure, ideally with dry layer aloft.

FWVS
A profile from maximum altitude to approximately FL150 at 1500'/min as suggested for the Buck-hygrometer. A fast decent through dry layers would be ideal.

Wetneph
Basic checks.

Self Calibration
1) Yawing oscillation in level flight. Approx +/- 3deg oscillation with period 10-15 sec, wings kept as level as possible. Normal science speed.
2) Acceleration or deceleration legs. From min to max operating speed at any level, whilst minimizing any altitude changes (ie. keeping aircraft vertical velocity as close to zero as possible). Where possible, it is useful to have a few degrees of flap set in order to achieve lower angles of attack - this only works in the appropriate speed range but the data fit well into the no-flap envelope. The aim of this is to generate a calibration for Angle of Attack, so covering the range 0-8 deg as a minimum is good - more than this should be possible using flap.
3) Yawing orbit manouevres. These are shallow orbits (~15 deg bank) with simultaneous yaw oscillation of +/-2 deg and period 10-15 sec. They come in pairs - so one clockwise and one anticlockwise as a minimum.
4) Transit legs sections of ~ 2min duration to be flown at min, normal and max operating speeds. These need to be completely steady speed, so the 2 min only commences once speed, altitude etc. are completely stable.
5)In addition, where there is any possibility to do a pair of legs of 2-5 min duration at the same height, oriented either N-S or E-W or alongwind or acrosswind, then these are useful and should be logged. They could be anytime when the aircraft is doing level runs, and staying at the same altitude. The aim is to check the TAS calibration.

Mission scientist's debrief for flight B394, 13 August 2008
Instrument test flight in Southwest Approaches inc. Camborne
S. M. Newman

Summary:
This was a successful instrument shakedown with various manoeuvres for instrument calibrations etc. This flight included a pass over Camborne in preparation for CAVIAR sorties.

The opportunity was taken during the transit to the southwest to perform variable speed runs (196, 240, 290 knots) for Phil's self calibration manoeuvres. The frontal position was as expected, with thick cloud thinning towards the south coast. On descent the aircraft encountered a Sc layer at around 5500 feet, with an extended run at 5000 feet within the layer for the benefit of CVI and cloud physics probes. For a large part of the time it was raining. Remaining at 5000 feet, acceleration and deceleration legs were performed, with flap to achieve maximum variation in the aircraft angle of attack. A profile down to the surface was terminated at 100 feet due to the ocean swell.
A run in clear air at 8000 feet was carried out for ARIES, with largely clear skies above, followed by ascent to FL280, at which runs with and against the wind were flown with scattered Cu/Sc below but clear above. A box pattern for the BBRs and yawing oscillations in level flight/15 degree orbits were also completed.
After ascent to FL350 a run west away from Camborne was followed by a run towards Camborne which passed directly overhead. A sonde was dropped just before reaching the Cornish coast, which should be of benefit to ARIES and the NPL solar tracking interferometer measurements on the ground.

Instruments:
CVI lost HORACE parameters such as TAS which compromised the data collection.
SHIMS lost some modules, although the visible module later recovered.
SID-2 and FFSSP failed during flight.
FSSP and PCASP experienced synchronised noise, source unknown.
TAFTS laser failed for part of flight (needs replacing), also missing one spectral band.

Aircraft Scientist's Log

TEST FLIGHT. MISSION SCIENTIST: STUART NEWMAN

Flight No B.394.... Date ...13/8/2008..... Page ..1.. of .....

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
1003		FL100			In cloud on ascent
100543	R1.1	FL100			216 knots run (min. speed)
100750	end R1.1	"	242	52°6. 1.0W	Acc. to "average" speed
100905	R1.2	"	245	52°6. 1°6W	240 knots run, still in cloud
	end R1.2	"	243	52,1°24W	Acc. to max. speed
101247	R1.3	"	243	52°N 1°30W	290 knots
101456	end R1.3	"	250	51°54, 1°48W	Climb, clearance between cloud layers
1020		FL180	254	51°48, 2°24W	Above messy CuSc below, some high cloud above
	P1	FL180 ↓	234		Profile descent, in clear air, CuSc below
1042		5500'			Entering tops of Sc
104249	R2.1	5000'	238	51N 4°30'W	Largely within Sc, breaks in places
1045	"	"			Raining... CVI and 2D probes seeing water droplets
1050	"	"			Quite heavy precipitation
1100	"	"	327	51°24', 5°42W	Consistent precip on this run
110257	end R2.1				
110511	R2.2	5000'	209	51°24, 5°34W	Acceleration and deceleration legs with flap, angle of attack variation
					These runs in cloud, same precip. 110750 min speed ~ 180 knots
					111000 max speed ~ 250 knots
					~~110~~ 111045 in clear slot, raining
					111157 min speed ~ 130 knots
111550	—	5000'	202	50°48, 6°6W	In thin Sc layer, patchy, multi-layered
					Intermittently in and out of cloud
112030					SID-2 seems to have failed
1124					Definitely clearing, patchy Cu rather than Sc.
112640	P2	5000' ↓			Profile down "until captain gets nervous" with heavy swell and whitecaps / breaking waves

Aircraft Scientist's Log

Flight No B.394..... Date ..13/8/08..... Page 2 of .....

FAAM © 2004

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
1128	P2 cont.	4000' ↓	248	50°12', 6°48W	Continuing descent to sea surface, passing through scraps of cloud
113330	"	1600'	252		PCASP Conc 180 c.f. CVI at 100
113652					End profile at 100'
113658	P3	100' ↑		50°6', 7°36W	PCASP max 400, typically 250,
					wet neph reports sea salt, hydrated scattering increase
114430	"	5000'	turn.		Rate of climb incr. to 1000' min⁻¹
114720	R3.1	8000'	207	50°12', 6°54W	Run just above tops of Cu/Sc, looks pretty clear above
115731	End R3.1	"			By altering heading kept clear skies above at all times
115850	P4	8000' ↑	045	50°0', 7°30	
122129	End P4	FL280		50°30', 7°24W	Looks pretty clear above, still Cu/Sc below
122230	R4.1	FL280	187	50°30', 7°24W	Heading S, west of Cornwall over ocean
123231	End R4.1	"			AGAINST WIND
	R4.2	FL280	004		Reciprocal run WITH WIND
124431	End R4.2	"			Scattered Cu below, clear above
124538	S.1	FL280	093	50°30', 7°6'	Box pattern – cross sun run Solar azimuth 184°
125005					FFSSP disk failure reported
125143	S.2	FL280	184	50°24, 6°24W	Into sun run
1252					Little bit of Ci going over top of us
1253					Now clear above, Cu/Sc with breaks below
125644	End R5.2				
125748	R5.3	FL280	277	50°6'6°36W	Across sun run
	R5.4	FL280	012	50°6', 7°12W	Away from sun run, Cu below, clear above
1307					TAFTS laser no longer working
130922					Yawing manoeuvres oscillation
131230					Coming into cloud

Aircraft Scientist's Log

Flight No B.394..... Date ...13/8/08..... Page ..... 3 of .....

GMT	Run / Profile	Height	Hdg	GPS Position	Remarks (clouds, weather, visibility, winds, sea state etc.)
131330					End yawing oscillations level flight
131400		FL280			15° bank orbit with yawing
1316				51°6' 6°30'	largely in cloud
1321					Orbit in opposite direction, yawing
		FL280			- aircraft instruments "not happy" with manoeuvres, horizon etc.
132825					End of orbits
133020	P5	FL280↑	149	51°0 6°30'	
1333					Intermittent contrailing
134615	R6.1.	FL350	265	49°54N 6°6W	Into-wind run, clear above, Cu/Sc below
135617	end R6.1				
135835	R6.2	FL350	082	50°N 7°18W	Run towards Camborne from west, clear above, messy Cu/Sc below
					Dropsonde released 1406
1409			084	50°6'5°36'W	Just over land, Cu below, clear above
141055					Over Camborne at this time
141307	P6	FL350↓	032		Descent beginning transit back
142807	end P6	FL160			End of science

Sortie

	Time (Z)	Manoeuvre	Duration (min)
1		Pirouette on ground (clear sky above only)	
2		T/O Cranfield & transit to operating area	~45
3		During transit (at fixed altitude) perform 2 min runs at min, normal and max speeds (2min starts when speed & altitude are stable)	
4		2 runs of 10 mins each through StCu layer (for CVI and any cloud phys probes)	20
5		Profile descent to 50ft over sea	10
6		Profile ascent to 1000ft above StCu tops or ~5000ft if clear slot	10
7		1 straight and level run of 10 mins (must be clear above for ARIES)	10
8		Profile ascent to FL280, interrupted if necessary	30
9		If dry slot found in ascent interrupt profile – Perform saw tooth profile through the dry slot (for Buck-hygro)	20
10		2 reciprocal straight and level runs at FL280 of 10 mins each orientated either N-S, E-W, along wind or across wind (direction for self-calibration)	20
11		Perform box pattern each side 5 mins into, away from and across sun (for BBR, SHIMS cal, SWS solar flaring).	25
12		Perform yawing oscillation at FL280. Approx +/- 3 deg oscillation with 10-15 sec period. Keep wings as level as possible. Normal science speed.	5
13		Perform yawing 2 orbit manoeuvres (1 clockwise, 1 anti-CW). Orbit with 15 deg bank with simultaneous yaw oscillation of +/- 2deg and 10-15 sec period.	15
14		Acceleration and deceleration legs (see self-calibration (2) for details)	10
15		Profile ascent to FL350	10
16		2 reciprocal straight and level runs at FL350 of 10 mins each orientated either N-S, E-W, along wind or across wind (direction for self-calibration). Drop 1 sonde with enough time to collect data before detrimental profile or turning.	20
17		Fast profile descent (at 1500'/min, reducing to 1000'/min in boundary layer) to 200ft	25
18		Transit to Cranfield	~45
	TOTAL		320

If time limited do not perform items 12, 13, 14. If transit time is shorter or saw tooth not performed, extend items 12,13,14.

CLOUD PHYSICS LOG Flight B 394

Date: 13/08/08	Operator: MAP	DRS Time: 07:45:00	DAU1 Time: +0	DAU2 Time: +0	DAU3 Time: +0	Aux1 Time: +0	Aux2 Time: +0	Page 1 of 4

G.M.T	PCASP		FFSSP	SID1	SID2	2D2-C		2D2-P		CIP25			CIP100			Habit	Remarks
	Conc/cc	Mean R	Block TX	Count	Count	Conc/L	Max size	Conc/m3	Max size	Conc m3	Max size	LWC	Conc m3	Max size	LWC		
10:05:45																	Start Run 1.1 @ FL100
10:06:00	100	0.47	380		100	100	800									2	
10:07:52																	End of Run 1.1
10:09:10																	Start Run 1.2 @ FL100
10:10:00	800	0.44	549		200	240	600									8	
10:11:10																	End of Run 1.2
10:12:48																	Start Run 1.3 @ FL100
10:13:00	20	0.08	599		1												
10:14:57																	End of Run 1.3
10:29:57	30	0.08	655														Start Profile 1 from FL180
10:31:00	25	0.08															FL170
10:31:59	20	0.08															FL160
10:32:55	30	0.08															FL150
10:34:20	30	0.08															FL140
10:35:12	30	0.08															FL130
10:36:01	30	0.08															FL120
10:36:59	40	0.08															FL110
10:37:55	55	0.08			1												FL100
10:38:57	40	0.08															FL090
10:39:55	40	0.08			1												FL080
10:40:52	45	0.09	656		1												FL070
10:41:47	50	0.08			1												FL060
10:42:52																	End of Profile 1 & StartRun 2 @ FL050
10:43:00	70	0.08			2												
10:45:00	100	0.39	759		2000	600	800									1	
10:47:00	2500	0.24	1006		500	250	600									1	
10:49:00	1000	0.39	1235		3000	555	200									1	
10:51:00	8300	0.38	1507		2000	1250	800									1	
10:53:00	4800	0.38	1760		1000	960	500									1	
10:55:00	400	0.41	1991		2000	80	575									1	
10:57:00	3000	0.37	2187		1000	790	700									1	
10:59:00	2800	0.36	2513		2000	800	800									1	
11:01:00	2200	0.38	2797		?????	400	300									1	
11:03:00																	End of Run 2
11:05:14																	Start Run 2.2 @ FL050
																	SID2 stopped working – no particles
																	B394B and B394C after 2 probe switch off's
11:13:53																	End of Run
11:26:42	70	0.10	3844		Off												Start Profile 2 from FL050
11:28:36	85	0.11															FL040
11:30:41	180	0.10															FL030
11:33:09	180	0.10	3850														FL020
11:35:06	240	0.12	3853														FL010

PCASP Reference Volts = 8.1V	FFSSP Reference Volts = 3.4V	2D2-C End element 1 voltage = -1.4V	CIP25 End element 1 voltage = n/a	CIP100 End element 1 voltage = n/a
PCASP Flow rate = 1.0 CC/sec		2D2-C End element 32 voltage = -1.1V	CIP25 End element 64 voltage = n/a	CIP100 End element 64 voltage = n/a
	SID2 Laser power = 32mW	2D2-P End element 1 voltage = n/a		

CLOUD PHYSICS LOG Flight B 394

Date: 13/08/08	Operator: MAP	DRS Time: 07:45:00	DAU1 Time: +0	DAU2 Time: +0	DAU3 Time: +0	Aux1 Time: +0	Aux2 Time: +0	Page 2 of 4

G.M.T	PCASP		FFSSP	SID1	SID2	2D2-C		2D2-P		CIP25			CIP100			Habit	Remarks
	Conc/cc	Mean R	Block TX	Count	Count	Conc/L	Max size	Conc/m3	Max size	Conc m3	Max size	LWC	Conc m3	Max size	LWC		
11:36:55	230	0.11	3854														End of P2 & Start P3 @ 100’
11:38:01	170	0.10	3856														FL010
11:39:23	150	0.11	3867														FL020
11:41:11	110	0.09	3874														FL030
11:42:45	120	0.09	3876														FL040
11:44:26	75	0.09	3877														FL050
11:45:23	20	0.09															FL060
11:46:27	75	0.09															FL070
11:47:20																	End of Profile 3 & Start Run 3.1 @ FL080
11:48:00	110	0.09															Noise glitches in CH1 on PCASP and FFSSP
11:50:00	80	0.09															At the same time
11:52:00	170	0.11	3879														
11:54:00	160	0.10															
11:56:00	170	0.09	3880														
11:57:31																	End of Run 3.1
11:58:52																	Start Profile 4 frpm FL080
12:00:04	90	0.10	3881														FL090
12:01:09	80	0.09															FL100
12:02:08	60	0.08															FL110
12:03:16	60	0.08															FL120
12:04:12	75	0.09															FL130
12:05:20	75	0.09	3882														FL140
12:06:25	50	0.09															FL150
12:07:30	36	0.08															FL160
12:08:21	35	0.08															FL170
12:09:21	35	0.08															FL180
12:10:40	300	0.20	3883			100	200									10	FL190
12:12:26	8	0.08	3885														FL200
12:14:00	20	0.08															FL210
12:15:25	15	0.08	3886														FL220
12:16:16	4	0.06															FL230
12:17:27	3	0.08															FL240
12:18:20	4	0.08															FL250
12:19:30	15	0.09															FL260
12:20:25	2	0.07															FL270
12:21:28	2	0.07															End of Profile 4 @ FL280
12:22:33																	Start Run 4.1 @ FL280
12:23:00	12	0.12															
12:25:00	40	0.08	388														
12:34:34																	Start Run 4.2 @ FL280
12:35:00	80	0.07	3893														
12:37:00	55	0.07	3894														
12:39:00	20	0.08	3895														

PCASP Reference Volts = 8.1V	FFSSP Reference Volts = 3.4V	2D2-C End element 1 voltage = -1.4V	CIP25 End element 1 voltage = n/a	CIP100 End element 1 voltage = n/a
PCASP Flow rate = 1.0 CC/sec		2D2-C End element 32 voltage = -1.1V	CIP25 End element 64 voltage = n/a	CIP100 End element 64 voltage = n/a
	SID2 Laser power = 32mW	2D2-P End element 1 voltage = n/a		

CLOUD PHYSICS LOG Flight B 394

Date: 13/08/08	Operator: MAP	DRS Time: 07:45:00	DAU1 Time: +0	DAU2 Time: +0	DAU3 Time: +0	Aux1 Time: +0	Aux2 Time: +0	Page 3 of 4

G.M.T	PCASP		FFSSP	SID1	SID2	2D2-C		2D2-P		CIP25			CIP100			Habit	Remarks
	Conc/cc	Mean R	Block TX	Count	Count	Conc/L	Max size	Conc/m3	Max size	Conc m3	Max size	LWC	Conc m3	Max size	LWC		
12:41:00			Off														FFSSP hard disk failed?
12:44:33																	End of Run 4.2
12:45:38																	Start Run 5.1 @ FL280
12:46:00	Noise																
12:48:00	Noise																
12:50:42																	End of Run 5.1
12:51:48																	Start Run 5.2 @ FL280
12:52:00	Noise																
12:54:00	Noise																
12:56:00	Noise																
12:56:45																	End of Run 5.2
12:57:58																	Start Run 5.3 @ FL280
12:58:00	Noise		Off														
13:00:00	Noise																FFSSP on C:\
13:02:00	30	0.07	0														Noise on PCASP less but consistant
13:02:50																	End of Run 5.3
13:04:09																	Start Run 5.4 @ FL280
13:05:00																	
13:07:00	Noise		4														
13:09:06																	End of Run
13:14:17																	Start Orbits
13:28:28																	End of Orbits
13:30:21	Noise		54			100	150									10	Start Profile 5 from FL280
13:31:19	Noise		58			3	150									10	FL290
13:32:44	Noise		59														FL300
13:34:07	Noise		60														FL310
13:35:54	Noise		62														FL320
13:38:45	Noise		64														FL330
13:41:57	Noise		67														FL340
13:46:14																	End of Profile & Start Run 6. 1 @ FL350
13:47:00	15	0.07	72														
13:49:00	Noise		74														
13:51:00	Noise		75														
13:53:00	Noise		77														
13:55:00	Noise		78														
13:56:15																	End of Run 6.1
13:58:36																	Start of Run 6.2 @ FL350
13:59:00	Noise		82														
14:01:00	Noise		84														
14:03:00	Noise		87														
14:05:00	15	0.07	89														
14:07:00	50	0.07	90														
14:09:00	Noise		93														

PCASP Reference Volts = 8.1V	FFSSP Reference Volts = 3.4V	2D2-C End element 1 voltage = -1.4V	CIP25 End element 1 voltage = n/a	CIP100 End element 1 voltage = n/a
PCASP Flow rate = 1.0 CC/sec		2D2-C End element 32 voltage = -1.1V	CIP25 End element 64 voltage = n/a	CIP100 End element 64 voltage = n/a
	SID2 Laser power = 32mW	2D2-P End element 1 voltage = n/a		

CLOUD PHYSICS LOG Flight B 394

Date: 13/08/08	Operator: MAP	DRS Time: 07:45:00	DAU1 Time: +0	DAU2 Time: +0	DAU3 Time: +0	Aux1 Time: +0	Aux2 Time: +0	Page 4 of 4

G.M.T	PCASP		FFSSP	SID1	SID2	2D2-C		2D2-P		CIP25			CIP100			Habit	Remarks
	Conc/cc	Mean R	Block TX	Count	Count	Conc/L	Max size	Conc/m3	Max size	Conc m3	Max size	LWC	Conc m3	Max size	LWC		
14:11:00	Noise		95														
14:13:06																	End of Run 6.2 & Start Profile 6 from FL350
14:14:32	Noise		99														FL340
14:15:37	Noise		100														FL330
14:16:33	Noise		101														FL320
14:17:21	Noise																FL310
14:18:06	Noise		102														FL300
14:18:57	14	0.07															FL290
14:19:50	500	0.15	108			100	150										FL280
14:20:20	Noise		113													10	FL270
14:21:15	160	0.17	116			100	200									10	FL260
14:22:10	50	0.28	117			130	375									10	FL250
14:23:07	100	0.25	123			25	525									10	FL240
14:23:45	160	0.21	129			140	275									10	FL230
14:24:21	50	0.07	132														FL220
14:25:03	50	0.08				3											FL210
14:25:32	70	0.13	133			3											FL200
14:26:13	35	0.08	134			1											FL190
14:26:47	45	0.08				2											FL180
14:27:22	60	0.07	135			1											FL170
14:28:07	90	0.21	138			80	800									8	End of Profile 6 @ FL160
	SID2 seemed to be working very well until data stopped. Housekeeping data seemed to be OK. FFSSP hard disk (or more likely the SCSI interface system) failed ¾ through flight potentially losing the cloud data (including period when SID2 was working) FFSSP Works OK on C:\ drive PCASP and FFSSP are picking up noise possibly from Aries or Deimos																

PCASP Reference Volts = 8.1V	FFSSP Reference Volts = 3.4V	2D2-C End element 1 voltage = -1.4V	CIP25 End element 1 voltage = n/a	CIP100 End element 1 voltage = n/a
PCASP Flow rate = 1.0 CC/sec		2D2-C End element 32 voltage = -1.1V	CIP25 End element 64 voltage = n/a	CIP100 End element 64 voltage = n/a
	SID2 Laser power = 32mW	2D2-P End element 1 voltage = n/a		

FAAM Dropsonde Flight Log

Flight No.	B394	**Date**	13/08/2008	**Operator**	Doug Anderson	**Page No.**	1 of 1

GMT	**Sonde No.**	**Event** *eg land, splashdown*	**Comments** *pressure hPa, T deg C, RH %, wind direction deg, wind speed m/s,* ***longitude, latitude****, height m*
13:57:30	1	Launch	237.00 -50.00 19.63 82.00 71.61 -12.97 **-6.077205 50.166153**
14:18:42	1	Splashdown	1007.67 15.71 999.00 267.93 14.54 -11.30 **-5.912561 50.176107**
			End drop pressure override 1007.7 Surface alt unknown ticked

CVI log

b394_cvi_log.txt

8/13/08 8:54:47 AM zero lyman at 853
8/13/08 8:54:56 AM turn on vac and counterflow pumps
8/13/08 8:55:26 AM wait for some time for system to purge and for counterflow lines to dry before performing a real zero
8/13/08 8:55:38 AM cnc counts still falling
8/13/08 8:55:52 AM filters discountedcted
8/13/08 8:55:57 AM horace feed ok
8/13/08 8:56:25 AM other paras look reasonable - cvi flow temps pressures
8/13/08 8:57:16 AM N(CNC) >> N(OPC) when system was started and conterflow was off - why is this - are the concentrations the same?
8/13/08 8:57:41 AM one of AW humicap devices in the counterflow
8/13/08 9:01:04 AM change l control
8/13/08 9:02:26 AM high flow through counteroflow
8/13/08 9:02:43 AM high flow through counteroflow
8/13/08 9:03:25 AM do we need to seal the counterflow system when it is not operational to avoid it becoming humid again?
8/13/08 9:30:51 AM do we need to seal the counterflow system when it is not operational to avoid it becoming humid again?
8/13/08 9:30:56 AM do we need to seal the counterflow system when it is not operational to avoid it becoming humid again?
8/13/08 9:34:01 AM do we need to seal the counterflow system when it is not operational to avoid it becoming humid again?
8/13/08 9:34:16 AM lyman stable now perform real zero
8/13/08 9:35:11 AM lyman stable now perform real zero
8/13/08 9:35:18 AM lyman stable now perform real zero
8/13/08 9:37:38 AM counterflow off to change plumbing
8/13/08 9:39:01 AM pumps back on,
8/13/08 9:39:11 AM set CF to 5 for take off
8/13/08 9:39:18 AM set CF to 5 for take off
8/13/08 10:04:42 AM CNC is VERY high 4000 with cf on
8/13/08 10:06:08 AM incrase L to see the effect
8/13/08 10:06:12 AM in icing conditions
8/13/08 10:07:04 AM ice is hitting tip and melting so far
8/13/08 10:07:39 AM no horace!
8/13/08 10:08:56 AM horace TAS and Tamb missing
8/13/08 10:10:35 AM no noise on PCASP
8/13/08 10:13:32 AM no noise on PCASPabout to stop and restart horace feed

b394_b_cvi_log.txt

8/13/08 10:32:28 AM
8/13/08 10:36:48 AM high level cloud free turn off counterflow for a while
8/13/08 10:39:10 AM cf off NOW
8/13/08 10:39:59 AM counts coming through now
8/13/08 10:46:13 AM in cloud now, no TAS no Tamb
8/13/08 10:46:57 AM in cloud now, no TAS no Tamb
8/13/08 10:48:10 AM in cloud now, no TAS no Tamb
8/13/08 10:48:19 AM in cloud now, no TAS no Tamb
8/13/08 10:52:33 AM change l to 2.4
8/13/08 10:52:39 AM change l to 2.4
8/13/08 10:57:24 AM drizzle on windscreen
8/13/08 10:58:10 AM l to 3.2
8/13/08 10:58:14 AM l to 3.2
8/13/08 10:58:20 AM l to 3.2
8/13/08 10:58:25 AM l to 3.2
8/13/08 10:58:29 AM l to 3.2
8/13/08 10:58:32 AM l to 3.2
8/13/08 10:58:36 AM l to 3.2
8/13/08 11:03:56 AM end of 20 min sc run
8/13/08 11:13:47 AM drizzle below cloud
8/13/08 11:17:38 AM broken cloud
8/13/08 11:19:35 AM drop l control
8/13/08 11:19:40 AM drop l control
8/13/08 11:22:39 AM drop l control again 1.7
8/13/08 11:22:43 AM drop l control again 1.7

8/13/08 11:28:09 AM profile descent CF off
8/13/08 11:29:13 AM counts incerease now
8/13/08 11:32:40 AM counts incerease now
8/13/08 11:32:44 AM counts incerease now
8/13/08 11:32:57 AM counts incerease now
8/13/08 11:33:02 AM counts incerease now
8/13/08 11:33:05 AM counts incerease now
8/13/08 11:33:10 AM counts incerease now
8/13/08 11:33:16 AM counts incerease now
8/13/08 11:33:19 AM counts incerease now
8/13/08 11:33:22 AM counts incerease now
8/13/08 11:33:29 AM counts incerease now
8/13/08 11:40:45 AM counts incerease now
8/13/08 11:40:57 AM counts incerease now
8/13/08 11:41:01 AM counts incerease now
8/13/08 11:55:09 AM above BL now. Aries run Set CF for zero Aerosol
8/13/08 11:55:19 AM CF on at 1.7
8/13/08 11:55:39 AM CF on at 1.7
8/13/08 11:55:42 AM CF on at 1.7
8/13/08 11:55:48 AM CF on at 1.7
8/13/08 11:56:01 AM pcasp at 0
8/13/08 11:56:07 AM cnc falling
8/13/08 11:56:23 AM cnc falling
8/13/08 11:56:29 AM cnc falling
8/13/08 11:56:35 AM cnc falling
8/13/08 11:56:37 AM cnc falling
8/13/08 11:56:46 AM cpc<0.7
8/13/08 11:57:13 AM effect of cf at 2444m compared to doing a run at 5kft???
8/13/08 11:59:38 AM cf off profile climb
8/13/08 12:15:40 PM small ioce crystals
8/13/08 12:17:22 PM below - broken sc with cu popping up into it
8/13/08 12:22:31 PM increase pcasp flow dial is correct, software reads 0.02
8/13/08 12:23:42 PM wind nruns
8/13/08 12:27:25 PM dew point horace=-49.9
8/13/08 12:27:39 PM lyman cwc=-5.7
8/13/08 12:32:09 PM lyman cwc=-5.7
8/13/08 12:37:40 PM
8/13/08 1:23:28 PM
8/13/08 1:23:32 PM cf on
8/13/08 1:23:39 PM cf thin Ci?
8/13/08 1:25:43 PM banking turn
8/13/08 1:46:48 PM banking turn
8/13/08 2:19:22 PM banking turn
8/13/08 2:19:33 PM profile descent - about to enter cloud
8/13/08 2:23:52 PM profile descent - about to enter cloud
8/13/08 2:42:08 PM increase l for landing
8/13/08 2:42:14 PM increase l for landing

B394_SWS_SHIMS_EventLog.txt

```
09:36:10.85  ---      -     -     -     -
09:36:10.86  ---      -     -     -     -  +++ SOFTWARE START/RESTART +++
09:36:10.86  ---      -     -     -     -  +++ hh:mm:ss.ff / Instr / Posn / Period /
tVIS/ tNIR / Comment +++
09:36:10.86  ---      -     -     -     -  +++ Flight no. B394
09:36:10.86  ---      -     -     -     -
09:36:22.91  SWS      -     -     -     -  Initialization: VIS OK NIR OK
09:36:23.00  USH      -     -     -     -  Initialization: VIS OK NIR OK
09:36:23.09  LSH      -     -     -     -  Initialization: VIS OK NIR OK
09:37:57.51  ---      -     -     -     -  Reset shutters.
09:38:02.24  ---      -     -     -     -  Reset shutters.
09:38:06.50  SWS      -     -     -     -  Manual scene recording started.
09:38:06.51  LSH      -     -     -     -  Manual scene recording started.
09:38:06.51  USH      -     -     -     -  Manual scene recording started.
09:38:24.14  SWS      -   100     -     -  Sample period changed from 250ms to 100ms.
09:38:27.10  USH      -   100     -     -  Sample period changed from 250ms to 100ms.
09:38:30.26  LSH      -   100     -     -  Sample period changed from 250ms to 100ms.
09:38:36.35  SWS      -     -   200     -  VIS int.time changed from 5ms to 200ms.
09:38:36.90  SWS      -     -     -     -  Warning: Clipping may be occurring.
09:38:40.23  SWS      -     -   100     -  VIS int.time changed from 200ms to 100ms.
09:38:41.92  SWS      -     -     -   100  NIR int.time changed from 5ms to 100ms.
09:38:47.08  USH      -     -   100     -  VIS int.time changed from 5ms to 100ms.
09:38:48.62  USH      -     -     -   100  NIR int.time changed from 5ms to 100ms.
09:38:52.48  LSH      -     -   100     -  VIS int.time changed from 5ms to 100ms.
09:38:54.25  LSH      -     -     -   100  NIR int.time changed from 5ms to 100ms.
09:40:10.47  ---      -     -     -     -  *** Lower SHIMS producing noise.
09:41:09.50  ---      -     -     -     -  *** Running cool box at 21 degrees as if
condensation is problem then cooling won't help
09:44:45.80  SWS      -     -     -     -  Warning: Clipping may be occurring.
09:45:07.34  SWS      -     -     -     -  Telescope motor initialised.
09:45:20.16  SWS    0.0     -     -     -  Telescope sent to 113.927
09:45:21.29  SWS  110.9     -     -     -  Telescope stopped.
09:45:37.77  SWS  113.9     -     -     -  Telescope sent to 90.000
09:59:56.06  SWS      -     -     -     -  Warning: Clipping may be occurring.
10:00:10.45  SWS      -     -    75     -  VIS int.time changed from 100ms to 75ms.
10:00:10.46  SWS      -     -     -    75  NIR int.time changed from 100ms to 75ms.
10:00:15.91  USH      -     -   300     -  VIS int.time changed from 100ms to 300ms.
10:00:15.92  USH      -     -     -   300  NIR int.time changed from 100ms to 300ms.
10:00:26.35  LSH      -     -   300     -  VIS int.time changed from 100ms to 300ms.
10:00:26.36  LSH      -     -     -   300  NIR int.time changed from 100ms to 300ms.
10:00:39.07  SWS   90.0     -     -     -  Telescope sent to -6.000
10:00:39.46  SWS      -     -     -     -  Warning: Clipping may be occurring.
10:00:40.19  SWS   -6.0     -     -     -  Telescope stopped.
10:00:44.64  SWS      -     -    50     -  VIS int.time changed from 75ms to 50ms.
10:00:44.64  SWS      -     -     -    50  NIR int.time changed from 75ms to 50ms.
10:00:54.49  SWS      -     -     -     -  Dark measurement started.
10:00:54.77  LSH      -     -     -     -  Dark measurement started.
10:00:54.78  USH      -     -     -     -  Dark measurement started.
10:00:54.82  SWS      -     -     -     -  Warning: Abnormally bright dark
measurement.
10:00:55.30  LSH      -     -     -     -  Warning: Abnormally bright dark
measurement.
10:00:55.50  USH      -     -     -     -  Warning: Abnormally bright dark
measurement.
10:00:55.50  SWS      -     -     -     -  Manual scene recording started.
10:00:58.23  LSH      -     -     -     -  Manual scene recording started.
10:00:58.45  USH      -     -     -     -  Manual scene recording started.
10:01:16.44  USH      -     -     -     -  Warning: Clipping may be occurring.
10:01:19.03  USH      -     -     -     -  Warning: Clipping may be occurring.
```

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10:01:21.94  USH      -      -      -      -  Warning: Clipping may be occurring.
10:01:29.31  SWS      -      -      -      -  Warning: Clipping may be occurring.
10:01:34.05  USH      -      -    100      -  VIS int.time changed from 300ms to 100ms.
10:01:34.06  USH      -      -      -    100  NIR int.time changed from 300ms to 100ms.
10:01:40.96  LSH      -      -     75      -  VIS int.time changed from 300ms to 75ms.
10:01:40.97  LSH      -      -      -     75  NIR int.time changed from 300ms to 75ms.
10:01:46.32  SWS      -      -     45      -  VIS int.time changed from 50ms to 45ms.
10:01:46.32  SWS      -      -      -     45  NIR int.time changed from 50ms to 45ms.
10:01:49.85  SWS      -      -      -      -  Warning: Clipping may be occurring.
10:01:56.79  SWS      -      -     40      -  VIS int.time changed from 45ms to 40ms.
10:01:56.79  SWS      -      -      -     40  NIR int.time changed from 45ms to 40ms.
10:02:47.31  ---      -      -      -      -  *** Lower SHIMS vis giving reading but
still noisy
10:03:37.34  ---      -      -      -      -  *** Will try and cool box down to 12
during transit to if it makes any difference
10:03:46.67  ---      -      -      -      -  *** Currently 23 degrees
10:10:52.96  LSH      -      -    600      -  VIS int.time changed from 75ms to 600ms.
10:10:52.97  LSH      -      -      -    600  NIR int.time changed from 75ms to 600ms.
10:13:20.42  USH      -      -      -      -  Idling
10:13:20.45  LSH      -      -      -      -  Idling
10:13:20.47  SWS      -      -      -      -  Idling
10:13:24.14  USH      -      -      -      -  Dark measurement started.
10:13:24.17  LSH      -      -      -      -  Dark measurement started.
10:13:24.17  SWS      -      -      -      -  Dark measurement started.
10:13:24.47  USH      -      -      -      -  Warning: Abnormally bright dark
measurement.
10:13:24.81  SWS      -      -      -      -  Warning: Abnormally bright dark
measurement.
10:13:25.17  LSH      -      -      -      -  Warning: Abnormally bright dark
measurement.
10:13:25.40  SWS      -      -      -      -  Idling
10:13:25.60  USH      -      -      -      -  Idling
10:13:30.80  LSH      -      -      -      -  Idling
10:13:35.42  SWS      -      -      -      -  Dark measurement started.
10:13:35.42  LSH      -      -      -      -  Dark measurement started.
10:13:35.46  USH      -      -      -      -  Dark measurement started.
10:13:35.69  SWS      -      -      -      -  Warning: Abnormally bright dark
measurement.
10:13:36.15  USH      -      -      -      -  Warning: Abnormally bright dark
measurement.
10:13:36.27  SWS      -      -      -      -  Idling
10:13:36.45  LSH      -      -      -      -  Warning: Abnormally bright dark
measurement.
10:13:37.30  USH      -      -      -      -  Idling
10:13:42.08  LSH      -      -      -      -  Idling
10:13:46.12  ---      -      -      -      -  Reset shutters.
10:13:50.67  SWS      -      -      -      -  Dark measurement started.
10:13:50.68  LSH      -      -      -      -  Dark measurement started.
10:13:50.69  USH      -      -      -      -  Dark measurement started.
10:13:51.51  SWS      -      -      -      -  Idling
10:13:51.70  LSH      -      -      -      -  Warning: Abnormally bright dark
measurement.
10:13:52.53  USH      -      -      -      -  Idling
10:13:57.33  LSH      -      -      -      -  Idling
10:14:01.21  USH      -      -      -      -  Manual scene recording started.
10:14:01.21  LSH      -      -      -      -  Manual scene recording started.
10:14:01.21  SWS      -      -      -      -  Manual scene recording started.
10:14:13.92  SWS      -      -     75      -  VIS int.time changed from 40ms to 75ms.
10:14:13.93  SWS      -      -      -     75  NIR int.time changed from 40ms to 75ms.
10:14:18.88  SWS      -      -    300      -  VIS int.time changed from 75ms to 300ms.
10:14:18.89  SWS      -      -      -    300  NIR int.time changed from 75ms to 300ms.
```

```
10:14:25.39  USH      -      -   300     -  VIS int.time changed from 100ms to 300ms.
10:14:25.40  USH      -      -     -   300  NIR int.time changed from 100ms to 300ms.
10:14:25.58  SWS      -      -     -     -  Warning: Clipping may be occurring.
10:14:31.15  SWS      -      -   100     -  VIS int.time changed from 300ms to 100ms.
10:14:31.16  SWS      -      -     -   100  NIR int.time changed from 300ms to 100ms.
10:14:35.72  SWS      -      -     -     -  Warning: Clipping may be occurring.
10:14:40.89  SWS      -      -    50     -  VIS int.time changed from 100ms to 50ms.
10:14:40.89  SWS      -      -     -    50  NIR int.time changed from 100ms to 50ms.
10:14:52.06  SWS      -      -     -     -  Idling
10:14:52.08  USH      -      -     -     -  Idling
10:14:52.62  LSH      -      -     -     -  Idling
10:14:56.63  SWS      -      -     -     -  Dark measurement started.
10:14:56.64  LSH      -      -     -     -  Dark measurement started.
10:14:56.64  USH      -      -     -     -  Dark measurement started.
10:14:57.60  SWS      -      -     -     -  Idling
10:14:57.67  LSH      -      -     -     -  Warning: Abnormally bright dark
measurement.
10:15:00.48  USH      -      -     -     -  Idling
10:15:03.32  LSH      -      -     -     -  Idling
10:15:04.70  SWS      -      -     -     -  Manual scene recording started.
10:15:04.70  LSH      -      -     -     -  Manual scene recording started.
10:15:04.71  USH      -      -     -     -  Manual scene recording started.
10:16:16.54  USH      -      -     -     -  Warning: Clipping may be occurring.
10:16:23.30  USH      -      -   100     -  VIS int.time changed from 300ms to 100ms.
10:16:23.31  USH      -      -     -   100  NIR int.time changed from 300ms to 100ms.
10:16:57.20  SWS   -6.0      -     -     -  Telescope at scan limit - going to 45.0
10:16:57.62  SWS   -4.1      -     -     -  Telescope sent to -45.000
10:17:02.10  SWS   40.5      -     -     -  Telescope at scan limit - going to -45.0
10:17:02.77  SWS   32.5      -     -     -  Telescope at scan limit - going to -45.0
10:17:03.49  SWS   23.9      -     -     -  Telescope at scan limit - going to -45.0
10:17:04.18  SWS   15.6      -     -     -  Telescope at scan limit - going to -45.0
10:17:04.89  SWS    7.1      -     -     -  Telescope at scan limit - going to -45.0
10:17:05.61  SWS   -1.6      -     -     -  Telescope at scan limit - going to 45.0
10:17:06.33  SWS  -10.2      -     -     -  Telescope at scan limit - going to 45.0
10:17:07.04  SWS  -18.7      -     -     -  Telescope at scan limit - going to 45.0
10:17:07.75  SWS  -27.3      -     -     -  Telescope at scan limit - going to 45.0
10:17:08.46  SWS  -35.8      -     -     -  Telescope at scan limit - going to 45.0
10:17:09.19  SWS  -44.4      -     -     -  Telescope at scan limit - going to 45.0
10:17:17.18  SWS   45.0      -     -     -  Telescope at scan limit - going to -45.0
10:17:24.30  SWS  -36.3      -     -     -  Telescope stopped.
10:17:47.40  SWS  -36.3      -     -     -  Telescope sent to -6.000
10:19:53.27  USH      -      -     -     -  Dark measurement started.
10:19:54.76  USH      -      -     -     -  Manual scene recording started.
10:20:01.74  USH      -      -     -     -  Idling
10:20:11.55  USH      -      -     -     -  Manual scene recording started.
10:20:29.05  SWS      -      -   600     -  VIS int.time changed from 50ms to 600ms.
10:20:29.05  SWS      -      -     -   600  NIR int.time changed from 50ms to 600ms.
10:20:30.25  SWS      -      -     -     -  Warning: Clipping may be occurring.
10:20:33.85  SWS      -      -   400     -  VIS int.time changed from 600ms to 400ms.
10:20:33.85  SWS      -      -     -   400  NIR int.time changed from 600ms to 400ms.
10:21:11.91  ---      -      -     -     -  *** Coolbox temp currently 17 deg
10:21:54.57  SWS      -      -     -     -  Warning: Clipping may be occurring.
10:22:03.52  SWS      -      -     -     -  Warning: Clipping may be occurring.
10:22:46.32  SWS      -      -     -     -  Warning: Clipping may be occurring.
10:23:03.30  SWS      -      -     -     -  Warning: Clipping may be occurring.
10:23:26.24  SWS      -      -     -     -  Warning: Clipping may be occurring.
10:23:41.88  ---      -      -     -     -  *** Currently above above 7/8 sc5 and
below 2/8 ci1
10:23:47.68  SWS      -      -   100     -  VIS int.time changed from 400ms to 100ms.
10:23:47.68  SWS      -      -     -   100  NIR int.time changed from 400ms to 100ms.
10:24:57.55  SWS      -      -     -     -  Warning: Clipping may be occurring.
```

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10:25:22.09  SWS      -     -     -     -  Warning: Clipping may be occurring.
10:26:42.10  USH      -     -     -     -  Idling
10:26:42.12  SWS      -     -     -     -  Idling
10:26:42.48  LSH      -     -     -     -  Idling
10:26:43.61  SWS      -     -     -     -  Dark measurement started.
10:26:43.62  LSH      -     -     -     -  Dark measurement started.
10:26:43.63  USH      -     -     -     -  Dark measurement started.
10:26:44.64  LSH      -     -     -     -  Warning: Abnormally bright dark
measurement.
10:26:45.11  SWS      -     -     -     -  Idling
10:26:45.48  USH      -     -     -     -  Idling
10:26:50.27  LSH      -     -     -     -  Idling
10:26:54.09  SWS      -     -     -     -  Manual scene recording started.
10:26:54.10  LSH      -     -     -     -  Manual scene recording started.
10:26:54.11  USH      -     -     -     -  Manual scene recording started.
10:30:31.69  SWS      -     -   300     -  VIS int.time changed from 100ms to 300ms.
10:30:31.71  SWS      -     -     -   300  NIR int.time changed from 100ms to 300ms.
10:31:22.39  SWS      -     -     -     -  Warning: Clipping may be occurring.
10:31:46.06  SWS      -     -     -     -  Warning: Clipping may be occurring.
10:34:41.53  ---      -     -     -     -  *** Coolbox temp now at 12 degress
10:37:45.90  SWS   -6.0     -     -     -  Telescope sent to 174.000
10:37:46.77  SWS      -     -     -     -  Warning: Clipping may be occurring.
10:37:47.61  SWS  172.7     -     -     -  Telescope stopped.
10:37:56.26  SWS      -     -    75     -  VIS int.time changed from 300ms to 75ms.
10:37:56.27  SWS      -     -     -    75  NIR int.time changed from 300ms to 75ms.
10:38:00.64  SWS      -     -    45     -  VIS int.time changed from 75ms to 45ms.
10:38:00.65  SWS      -     -     -    45  NIR int.time changed from 75ms to 45ms.
10:38:05.28  SWS      -     -    35     -  VIS int.time changed from 45ms to 35ms.
10:38:05.29  SWS      -     -     -    35  NIR int.time changed from 45ms to 35ms.
10:39:32.48  SWS      -     -    75     -  VIS int.time changed from 35ms to 75ms.
10:39:32.49  SWS      -     -     -    75  NIR int.time changed from 35ms to 75ms.
10:39:47.41  SWS      -     -    30     -  VIS int.time changed from 75ms to 30ms.
10:39:47.42  SWS      -     -     -    30  NIR int.time changed from 75ms to 30ms.
10:39:51.50  SWS      -     -   200     -  VIS int.time changed from 30ms to 200ms.
10:39:51.51  SWS      -     -     -   200  NIR int.time changed from 30ms to 200ms.
10:39:54.24  USH      -     -     -     -  Idling
10:39:54.26  SWS      -     -     -     -  Idling
10:39:54.49  LSH      -     -     -     -  Idling
10:39:56.87  SWS      -     -     -     -  Dark measurement started.
10:39:56.88  LSH      -     -     -     -  Dark measurement started.
10:39:56.89  USH      -     -     -     -  Dark measurement started.
10:39:57.90  LSH      -     -     -     -  Warning: Abnormally bright dark
measurement.
10:39:58.73  USH      -     -     -     -  Idling
10:39:59.32  SWS      -     -     -     -  Idling
10:40:02.34  SWS      -     -     -     -  Manual scene recording started.
10:40:02.34  USH      -     -     -     -  Manual scene recording started.
10:40:03.53  LSH      -     -     -     -  Idling
10:40:20.06  LSH      -     -     -     -  Manual scene recording started.
10:41:11.87  SWS      -     -     -     -  Warning: Clipping may be occurring.
10:41:31.77  SWS      -     -     -     -  Warning: Clipping may be occurring.
10:41:33.33  ---      -     -     -     -  *** Looks clear sbove with 3/8 sc5 below
over rough sea
10:41:43.64  SWS      -     -     -     -  Warning: Clipping may be occurring.
10:41:51.91  SWS      -     -     -     -  Warning: Clipping may be occurring.
10:41:59.30  SWS      -     -     -     -  Warning: Clipping may be occurring.
10:42:06.39  LSH      -     -     -     -  Dark measurement started.
10:42:07.22  LSH      -     -     -     -  Warning: Abnormally bright dark
measurement.
10:42:12.85  LSH      -     -     -     -  Manual scene recording started.
10:42:22.87  SWS      -     -     -     -  Warning: Clipping may be occurring.
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10:43:58.88  SWS      -     -     -     -  Warning: Clipping may be occurring.
10:44:47.86  SWS      -     -     -     -  Warning: Clipping may be occurring.
10:45:37.71  SWS      -     -     -     -  Warning: Clipping may be occurring.
10:45:40.23  SWS      -     -     -     -  Warning: Clipping may be occurring.
10:48:01.35  SWS      -     -     -     -  Warning: Clipping may be occurring.
10:48:24.04  SWS      -     -    50     -  VIS int.time changed from 200ms to 50ms.
10:48:24.05  SWS      -     -     -    50  NIR int.time changed from 200ms to 50ms.
10:48:31.59  LSH      -     -     -     -  Dark measurement started.
10:48:32.42  LSH      -     -     -     -  Warning: Abnormally bright dark
measurement.
10:48:38.06  LSH      -     -     -     -  Manual scene recording started.
10:49:35.59  ---      -     -     -     -  *** Lower SHIMS vis much happier at 12
degs. Will allow coolbox to wrm up to see if I can replicate probs
10:49:54.44  ---      -     -     -     -  *** Coolbox currently at 12 degs
10:50:15.19  SWS      -     -    75     -  VIS int.time changed from 50ms to 75ms.
10:50:15.20  SWS      -     -     -    75  NIR int.time changed from 50ms to 75ms.
10:50:21.53  SWS      -     -   100     -  VIS int.time changed from 75ms to 100ms.
10:50:21.54  SWS      -     -     -   100  NIR int.time changed from 75ms to 100ms.
10:50:32.97  USH      -     -   300     -  VIS int.time changed from 100ms to 300ms.
10:50:32.98  USH      -     -     -   300  NIR int.time changed from 100ms to 300ms.
10:54:13.67  SWS      -     -     -     -  Warning: Clipping may be occurring.
10:56:37.20  ---      -     -     -     -  *** In sc5 layer
10:59:47.21  SWS      -     -     -     -  Warning: Clipping may be occurring.
10:59:50.38  USH      -     -     -     -  Warning: Clipping may be occurring.
10:59:51.43  SWS      -     -     -     -  Warning: Clipping may be occurring.
11:00:13.20  SWS      -     -    75     -  VIS int.time changed from 100ms to 75ms.
11:00:13.21  SWS      -     -     -    75  NIR int.time changed from 100ms to 75ms.
11:00:17.83  SWS      -     -     -     -  Idling
11:00:17.92  USH      -     -     -     -  Idling
11:00:18.09  LSH      -     -     -     -  Idling
11:00:21.26  SWS      -     -     -     -  Dark measurement started.
11:00:21.26  LSH      -     -     -     -  Dark measurement started.
11:00:21.27  USH      -     -     -     -  Dark measurement started.
11:00:22.29  LSH      -     -     -     -  Warning: Abnormally bright dark
measurement.
11:00:22.48  SWS      -     -     -     -  Idling
11:00:25.13  USH      -     -     -     -  Idling
11:00:27.94  LSH      -     -     -     -  Idling
11:01:33.23  ---      -     -     -     -  *** Coolbox at 14 degrees appears to be
noise on lsh vis, nir and ush nir
11:01:37.14  ---      -     -     -     -  Reset shutters.
11:02:00.89  SWS      -     -     -     -  Dark measurement started.
11:02:00.90  LSH      -     -     -     -  Dark measurement started.
11:02:00.90  USH      -     -     -     -  Dark measurement started.
11:02:01.93  LSH      -     -     -     -  Warning: Abnormally bright dark
measurement.
11:02:02.09  SWS      -     -     -     -  Idling
11:02:03.75  SWS      -     -     -     -  Manual scene recording started.
11:02:04.75  USH      -     -     -     -  Idling
11:02:07.55  LSH      -     -     -     -  Idling
11:02:34.61  LSH      -     -     -     -  Dark measurement started.
11:02:34.64  USH      -     -     -     -  Dark measurement started.
11:02:34.65  SWS      -     -     -     -  Dark measurement started.
11:02:35.44  LSH      -     -     -     -  Warning: Abnormally bright dark
measurement.
11:02:36.22  SWS      -     -     -     -  Manual scene recording started.
11:02:38.26  USH      -     -     -     -  Idling
11:02:41.07  LSH      -     -     -     -  Idling
11:02:59.04  LSH      -     -     -     -  Manual scene recording started.
11:02:59.04  USH      -     -     -     -  Manual scene recording started.
11:04:01.28  USH      -     -     -     -  Warning: Clipping may be occurring.
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11:04:15.98  USH      -      -      -      -  Dark measurement started.
11:04:18.39  SWS      -      -      -      -  Warning: Clipping may be occurring.
11:04:19.50  USH      -      -      -      -  Manual scene recording started.
11:04:20.07  USH      -      -      -      -  Warning: Clipping may be occurring.
11:04:28.54  LSH      -      -      -      -  Dark measurement started.
11:04:29.37  LSH      -      -      -      -  Warning: Abnormally bright dark
measurement.
11:04:35.02  LSH      -      -      -      -  Manual scene recording started.
11:04:43.15  USH      -      -    200      -  VIS int.time changed from 300ms to 200ms.
11:04:43.16  USH      -      -      -    200  NIR int.time changed from 300ms to 200ms.
11:04:47.46  USH      -      -     75      -  VIS int.time changed from 200ms to 75ms.
11:04:47.46  USH      -      -      -     75  NIR int.time changed from 200ms to 75ms.
11:04:49.95  SWS      -      -      -      -  Idling
11:04:49.95  USH      -      -      -      -  Idling
11:04:50.45  LSH      -      -      -      -  Idling
11:04:55.28  SWS      -      -      -      -  Dark measurement started.
11:04:55.28  LSH      -      -      -      -  Dark measurement started.
11:04:55.29  USH      -      -      -      -  Dark measurement started.
11:04:56.31  LSH      -      -      -      -  Warning: Abnormally bright dark
measurement.
11:04:56.47  SWS      -      -      -      -  Idling
11:04:56.88  USH      -      -      -      -  Idling
11:05:01.94  LSH      -      -      -      -  Idling
11:05:04.37  SWS      -      -      -      -  Manual scene recording started.
11:05:04.37  LSH      -      -      -      -  Manual scene recording started.
11:05:04.38  USH      -      -      -      -  Manual scene recording started.
11:05:12.81  SWS      -      -      -      -  Warning: Clipping may be occurring.
11:05:19.12  SWS      -      -    100      -  VIS int.time changed from 75ms to 100ms.
11:05:19.13  SWS      -      -      -    100  NIR int.time changed from 75ms to 100ms.
11:05:46.58  SWS      -      -     75      -  VIS int.time changed from 100ms to 75ms.
11:05:46.59  SWS      -      -      -     75  NIR int.time changed from 100ms to 75ms.
11:05:48.78  SWS      -      -      -      -  Warning: Clipping may be occurring.
11:05:53.12  SWS      -      -     50      -  VIS int.time changed from 75ms to 50ms.
11:05:53.12  SWS      -      -      -     50  NIR int.time changed from 75ms to 50ms.
11:09:59.45  SWS      -      -    400      -  VIS int.time changed from 50ms to 400ms.
11:09:59.46  SWS      -      -      -    400  NIR int.time changed from 50ms to 400ms.
11:10:08.23  USH      -      -    100      -  VIS int.time changed from 75ms to 100ms.
11:10:08.23  USH      -      -      -    100  NIR int.time changed from 75ms to 100ms.
11:10:24.96  SWS  174.0      -      -      -  Telescope sent to -6.000
11:10:26.14  SWS      -      -      -      -  Warning: Clipping may be occurring.
11:10:26.65  SWS   -4.5      -      -      -  Telescope stopped.
11:10:30.70  SWS      -      -     75      -  VIS int.time changed from 400ms to 75ms.
11:10:30.70  SWS      -      -      -     75  NIR int.time changed from 400ms to 75ms.
11:12:29.03  USH      -      -    400      -  VIS int.time changed from 100ms to 400ms.
11:12:29.04  USH      -      -      -    400  NIR int.time changed from 100ms to 400ms.
11:13:42.77  SWS      -      -      -      -  Idling
11:13:42.80  SWS      -      -      -      -  Idling
11:13:42.94  USH      -      -      -      -  Idling
11:13:43.14  LSH      -      -      -      -  Idling
11:13:45.18  LSH      -      -      -      -  Dark measurement started.
11:13:45.18  USH      -      -      -      -  Dark measurement started.
11:13:45.20  SWS      -      -      -      -  Dark measurement started.
11:13:46.01  LSH      -      -      -      -  Warning: Abnormally bright dark
measurement.
11:13:46.77  SWS      -      -      -      -  Idling
11:13:49.83  USH      -      -      -      -  Idling
11:13:51.64  LSH      -      -      -      -  Idling
11:14:03.73  SWS      -      -      -      -  Manual scene recording started.
11:14:03.73  LSH      -      -      -      -  Manual scene recording started.
11:14:03.75  USH      -      -      -      -  Manual scene recording started.
11:15:04.55  SWS      -      -      -      -  Warning: Clipping may be occurring.
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11:15:09.15  USH      -      -      -      -  Warning: Clipping may be occurring.
11:15:12.65  SWS      -      -     50      -  VIS int.time changed from 75ms to 50ms.
11:15:12.66  SWS      -      -      -     50  NIR int.time changed from 75ms to 50ms.
11:15:16.24  USH      -      -    300      -  VIS int.time changed from 400ms to 300ms.
11:15:16.25  USH      -      -      -    300  NIR int.time changed from 400ms to 300ms.
11:15:49.05  USH      -      -      -      -  Warning: Clipping may be occurring.
11:15:59.01  USH      -      -    200      -  VIS int.time changed from 300ms to 200ms.
11:15:59.02  USH      -      -      -    200  NIR int.time changed from 300ms to 200ms.
11:16:36.47  USH      -      -      -      -  Warning: Clipping may be occurring.
11:16:43.60  USH      -      -    100      -  VIS int.time changed from 200ms to 100ms.
11:16:43.61  USH      -      -      -    100  NIR int.time changed from 200ms to 100ms.
11:17:51.14  SWS      -      -      -      -  Warning: Clipping may be occurring.
11:18:33.36  SWS      -      -      -      -  Warning: Clipping may be occurring.
11:18:35.96  SWS      -      -      -      -  Warning: Clipping may be occurring.
11:19:00.74  SWS      -      -      -      -  Warning: Clipping may be occurring.
11:20:39.88  SWS      -      -      -      -  Warning: Clipping may be occurring.
11:20:50.70  SWS      -      -      -      -  Warning: Clipping may be occurring.
11:20:56.80  SWS      -      -      -      -  Warning: Clipping may be occurring.
11:21:44.18  ---      -      -      -      -  *** coolbox now at 17 deg
11:21:49.60  USH      -      -      -      -  Idling
11:21:49.64  SWS      -      -      -      -  Idling
11:21:49.75  LSH      -      -      -      -  Idling
11:21:52.67  SWS      -      -      -      -  Dark measurement started.
11:21:52.68  LSH      -      -      -      -  Dark measurement started.
11:21:52.69  USH      -      -      -      -  Dark measurement started.
11:21:53.61  SWS      -      -      -      -  Idling
11:21:53.74  LSH      -      -      -      -  Warning: Abnormally bright dark
measurement.
11:21:54.64  USH      -      -      -      -  Idling
11:21:59.37  LSH      -      -      -      -  Idling
11:22:02.90  LSH      -      -      -      -  Dark measurement started.
11:22:03.73  LSH      -      -      -      -  Warning: Abnormally bright dark
measurement.
11:22:09.36  LSH      -      -      -      -  Idling
11:22:29.16  LSH      -      -      -      -  Dark measurement started.
11:22:30.01  LSH      -      -      -      -  Warning: Abnormally bright dark
measurement.
11:22:35.65  LSH      -      -      -      -  Idling
11:23:25.60  ---      -      -      -      -  *** Picking up noise on all nirs
11:23:41.81  ---      -      -      -      -  *** Will take coolbox back to 12 degs
11:23:49.40  SWS      -      -      -      -  Dark measurement started.
11:23:49.40  LSH      -      -      -      -  Dark measurement started.
11:23:49.43  USH      -      -      -      -  Dark measurement started.
11:23:50.96  LSH      -      -      -      -  Warning: Abnormally bright dark
measurement.
11:23:51.00  SWS      -      -      -      -  Idling
11:23:51.47  USH      -      -      -      -  Idling
11:23:54.63  USH      -      -      -      -  Manual scene recording started.
11:23:54.63  SWS      -      -      -      -  Manual scene recording started.
11:23:56.59  LSH      -      -      -      -  Idling
11:24:00.52  SWS      -      -     40      -  VIS int.time changed from 50ms to 40ms.
11:24:00.53  SWS      -      -      -     40  NIR int.time changed from 50ms to 40ms.
11:24:04.14  USH      -      -     45      -  VIS int.time changed from 100ms to 45ms.
11:24:04.15  USH      -      -      -     45  NIR int.time changed from 100ms to 45ms.
11:24:08.13  USH      -      -     30      -  VIS int.time changed from 45ms to 30ms.
11:24:08.14  USH      -      -      -     30  NIR int.time changed from 45ms to 30ms.
11:24:12.38  USH      -      -     10      -  VIS int.time changed from 30ms to 10ms.
11:24:12.39  USH      -      -      -     10  NIR int.time changed from 30ms to 10ms.
11:24:17.03  SWS      -      -     20      -  VIS int.time changed from 40ms to 20ms.
11:24:17.03  SWS      -      -      -     20  NIR int.time changed from 40ms to 20ms.
11:24:23.02  LSH      -      -      -      -  Manual scene recording started.
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11:25:41.53  ---      -     -     -     -  *** SWS nir vis, ush nir and vis now noisy
11:26:13.17  ---      -     -     -     -  Reset shutters.
11:26:22.40  SWS      -     -     -     -  Idling
11:26:25.07  SWS      -     -     -     -  Manual scene recording started.
11:26:43.04  SWS      -     -    75     -  VIS int.time changed from 20ms to 75ms.
11:26:43.05  SWS      -     -     -    75  NIR int.time changed from 20ms to 75ms.
11:26:46.67  SWS      -     -   400     -  VIS int.time changed from 75ms to 400ms.
11:26:46.68  SWS      -     -     -   400  NIR int.time changed from 75ms to 400ms.
11:26:47.62  SWS      -     -     -     -  Warning: Clipping may be occurring.
11:26:51.06  SWS      -     -   300     -  VIS int.time changed from 400ms to 300ms.
11:26:51.07  SWS      -     -     -   300  NIR int.time changed from 400ms to 300ms.
11:27:13.10  USH      -     -   200     -  VIS int.time changed from 10ms to 200ms.
11:27:13.11  USH      -     -     -   200  NIR int.time changed from 10ms to 200ms.
11:27:13.90  USH      -     -     -     -  Warning: Clipping may be occurring.
11:27:18.61  USH      -     -   100     -  VIS int.time changed from 200ms to 100ms.
11:27:18.62  USH      -     -     -   100  NIR int.time changed from 200ms to 100ms.
11:27:32.34  LSH      -     -    50     -  VIS int.time changed from 600ms to 50ms.
11:27:32.35  LSH      -     -     -    50  NIR int.time changed from 600ms to 50ms.
11:27:36.41  LSH      -     -   400     -  VIS int.time changed from 50ms to 400ms.
11:27:36.42  LSH      -     -     -   400  NIR int.time changed from 50ms to 400ms.
11:27:40.58  LSH      -     -   600     -  VIS int.time changed from 400ms to 600ms.
11:27:40.59  LSH      -     -     -   600  NIR int.time changed from 400ms to 600ms.
11:29:34.28  ---      -     -     -     -  *** still in 4/8 cu/sc
11:31:51.44  SWS      -     -     -     -  Warning: Clipping may be occurring.
11:31:55.50  SWS      -     -   200     -  VIS int.time changed from 300ms to 200ms.
11:31:55.51  SWS      -     -     -   200  NIR int.time changed from 300ms to 200ms.
11:32:05.67  USH      -     -     -     -  Idling
11:32:05.81  SWS      -     -     -     -  Idling
11:32:06.15  LSH      -     -     -     -  Idling
11:32:09.03  SWS      -     -     -     -  Dark measurement started.
11:32:09.03  LSH      -     -     -     -  Dark measurement started.
11:32:09.04  USH      -     -     -     -  Dark measurement started.
11:32:10.07  LSH      -     -     -     -  Warning: Abnormally bright dark
measurement.
11:32:10.88  USH      -     -     -     -  Idling
11:32:11.48  SWS      -     -     -     -  Idling
11:32:15.71  LSH      -     -     -     -  Idling
11:32:19.43  SWS      -     -     -     -  Manual scene recording started.
11:32:19.44  LSH      -     -     -     -  Manual scene recording started.
11:32:19.45  USH      -     -     -     -  Manual scene recording started.
11:32:49.59  SWS      -     -     -     -  Warning: Clipping may be occurring.
11:32:50.30  ---      -     -     -     -  *** coolbox at 15 degs
11:33:26.48  SWS      -     -     -     -  Warning: Clipping may be occurring.
11:33:38.15  SWS      -     -     -     -  Warning: Clipping may be occurring.
11:33:45.46  SWS      -     -   100     -  VIS int.time changed from 200ms to 100ms.
11:33:45.47  SWS      -     -     -   100  NIR int.time changed from 200ms to 100ms.
11:33:48.54  SWS      -     -     -     -  Warning: Clipping may be occurring.
11:33:59.26  SWS      -     -     -     -  Warning: Clipping may be occurring.
11:34:07.26  SWS      -     -     -     -  Warning: Clipping may be occurring.
11:34:14.21  SWS      -     -     -     -  Warning: Clipping may be occurring.
11:34:58.42  SWS      -     -     -     -  Warning: Clipping may be occurring.
11:35:16.39  SWS      -     -     -     -  Warning: Clipping may be occurring.
11:35:48.41  SWS      -     -     -     -  Warning: Clipping may be occurring.
11:36:07.06  SWS      -     -     -     -  Warning: Clipping may be occurring.
11:36:11.46  USH      -     -     -     -  Idling
11:36:11.48  SWS      -     -     -     -  Idling
11:36:11.67  LSH      -     -     -     -  Idling
11:36:14.18  SWS      -     -     -     -  Dark measurement started.
11:36:14.19  LSH      -     -     -     -  Dark measurement started.
11:36:14.21  USH      -     -     -     -  Dark measurement started.
```

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11:36:15.62  LSH      -      -      -      -  Warning: Abnormally bright dark
measurement.
11:36:15.66  SWS      -      -      -      -  Idling
11:36:16.08  USH      -      -      -      -  Idling
11:36:22.08  SWS      -      -      -      -  Manual scene recording started.
11:36:22.08  USH      -      -      -      -  Manual scene recording started.
11:36:22.41  SWS      -      -      -      -  Warning: Clipping may be occurring.
11:36:24.85  LSH      -      -      -      -  Idling
11:36:27.14  SWS      -      -     45      -  VIS int.time changed from 100ms to 45ms.
11:36:27.15  SWS      -      -      -     45  NIR int.time changed from 100ms to 45ms.
11:36:45.25  ---      -      -      -      -  *** coolbox at 14 degs
11:38:44.24  SWS      -      -      -      -  Warning: Clipping may be occurring.
11:39:23.36  LSH      -      -      -      -  Manual scene recording started.
11:39:25.79  SWS      -      -      -      -  Warning: Clipping may be occurring.
11:39:30.02  SWS      -      -      -      -  Warning: Clipping may be occurring.
11:40:18.52  SWS      -      -      -      -  Warning: Clipping may be occurring.
11:42:29.85  SWS      -      -      -      -  Warning: Clipping may be occurring.
11:42:30.98  ---      -      -      -      -  *** coolbox at 12 degs
11:42:34.94  SWS      -      -      -      -  Warning: Clipping may be occurring.
11:42:35.75  SWS      -      -      -      -  Idling
11:42:35.76  USH      -      -      -      -  Idling
11:42:36.24  LSH      -      -      -      -  Idling
11:42:39.72  USH      -      -      -      -  Dark measurement started.
11:42:39.73  LSH      -      -      -      -  Dark measurement started.
11:42:39.73  SWS      -      -      -      -  Dark measurement started.
11:42:41.03  SWS      -      -      -      -  Idling
11:42:41.16  LSH      -      -      -      -  Warning: Abnormally bright dark
measurement.
11:42:41.20  USH      -      -      -      -  Idling
11:42:50.40  LSH      -      -      -      -  Idling
11:43:48.84  SWS      -      -      -      -  Manual scene recording started.
11:43:48.84  LSH      -      -      -      -  Manual scene recording started.
11:43:48.85  USH      -      -      -      -  Manual scene recording started.
11:43:55.80  SWS      -      -    200      -  VIS int.time changed from 45ms to 200ms.
11:43:55.80  SWS      -      -      -    200  NIR int.time changed from 45ms to 200ms.
11:48:01.00  SWS   -6.0      -      -      -  Telescope at scan limit - going to 45.0
11:48:01.44  SWS   -4.1      -      -      -  Telescope sent to -45.000
11:48:05.99  SWS   39.7      -      -      -  Telescope at scan limit - going to -45.0
11:48:06.66  SWS   31.5      -      -      -  Telescope at scan limit - going to -45.0
11:48:07.38  SWS   22.9      -      -      -  Telescope at scan limit - going to -45.0
11:48:08.10  SWS   14.2      -      -      -  Telescope at scan limit - going to -45.0
11:48:08.85  SWS    5.4      -      -      -  Telescope at scan limit - going to -45.0
11:48:09.53  SWS   -3.2      -      -      -  Telescope at scan limit - going to 45.0
11:48:10.26  SWS  -11.5      -      -      -  Telescope at scan limit - going to 45.0
11:48:10.99  SWS  -20.2      -      -      -  Telescope at scan limit - going to 45.0
11:48:11.72  SWS  -29.0      -      -      -  Telescope at scan limit - going to 45.0
11:48:12.45  SWS  -37.7      -      -      -  Telescope at scan limit - going to 45.0
11:48:13.18  SWS  -45.0      -      -      -  Telescope at scan limit - going to 45.0
11:48:21.26  SWS   45.0      -      -      -  Telescope at scan limit - going to -45.0
11:48:29.33  SWS  -45.0      -      -      -  Telescope at scan limit - going to 45.0
11:48:37.08  SWS   43.7      -      -      -  Telescope stopped.
11:48:48.95  SWS   43.7      -      -      -  Telescope sent to -43.920
11:48:50.05  SWS  -43.9      -      -      -  Telescope stopped.
11:48:53.73  SWS  -43.9      -      -      -  Telescope sent to -44.420
11:48:55.86  SWS  -44.4      -      -      -  Telescope sent to -44.920
11:48:57.42  SWS  -44.9      -      -      -  Telescope sent to -45.420
11:49:00.01  SWS  -45.4      -      -      -  Telescope sent to -45.920
11:49:02.03  SWS  -45.9      -      -      -  Telescope sent to -46.420
11:49:04.64  SWS  -46.4      -      -      -  Telescope sent to -46.920
11:49:13.66  SWS  -46.9      -      -      -  Telescope sent to -50.000
11:49:25.83  SWS  -50.0      -      -      -  Telescope sent to -60.000
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11:49:39.64  SWS  -60.0     -     -     -  Telescope sent to -60.000
11:49:55.64  SWS  -60.0     -     -     -  Telescope sent to -9.000
11:49:56.75  SWS   -9.0     -     -     -  Telescope stopped.
11:51:49.01  SWS   -9.0     -     -     -  Telescope sent to 5.000
11:51:56.66  SWS    5.0     -     -     -  Telescope sent to 15.000
11:52:04.31  SWS   15.0     -     -     -  Telescope sent to 25.000
11:52:14.14  SWS   25.0     -     -     -  Telescope sent to 35.000
11:52:21.33  SWS   35.0     -     -     -  Telescope sent to 45.000
11:52:31.21  SWS   45.0     -     -     -  Telescope sent to 55.000
11:52:38.89  SWS   55.0     -     -     -  Telescope sent to 65.000
11:52:50.60  SWS   65.0     -     -     -  Telescope sent to 75.000
11:52:50.86  SWS      -     -     -     -  Warning: Clipping may be occurring.
11:52:56.34  SWS      -     -   100     -  VIS int.time changed from 200ms to 100ms.
11:52:56.35  SWS      -     -     -   100  NIR int.time changed from 200ms to 100ms.
11:53:06.65  SWS   75.0     -     -     -  Telescope sent to 85.000
11:53:23.15  SWS      -     -     -     -  Warning: Clipping may be occurring.
11:53:48.94  SWS   85.0     -     -     -  Telescope at scan limit - going to 1.8E+2
11:53:49.37  SWS   87.0     -     -     -  Telescope sent to 0.000
11:53:57.31  SWS  178.1     -     -     -  Telescope at scan limit - going to 0.0
11:53:57.99  SWS  170.1     -     -     -  Telescope at scan limit - going to 0.0
11:53:58.71  SWS  161.3     -     -     -  Telescope at scan limit - going to 0.0
11:53:59.46  SWS  152.4     -     -     -  Telescope at scan limit - going to 0.0
11:54:00.18  SWS  143.6     -     -     -  Telescope at scan limit - going to 0.0
11:54:00.90  SWS  135.0     -     -     -  Telescope at scan limit - going to 0.0
11:54:01.62  SWS  126.3     -     -     -  Telescope at scan limit - going to 0.0
11:54:02.36  SWS  117.6     -     -     -  Telescope at scan limit - going to 0.0
11:54:03.08  SWS  108.9     -     -     -  Telescope at scan limit - going to 0.0
11:54:03.82  SWS  100.1     -     -     -  Telescope at scan limit - going to 0.0
11:54:04.54  SWS   91.4     -     -     -  Telescope at scan limit - going to 0.0
11:54:05.27  SWS   82.6     -     -     -  Telescope at scan limit - going to 1.8E+2
11:54:05.99  SWS   74.0     -     -     -  Telescope at scan limit - going to 1.8E+2
11:54:06.71  SWS   65.4     -     -     -  Telescope at scan limit - going to 1.8E+2
11:54:07.44  SWS   56.6     -     -     -  Telescope at scan limit - going to 1.8E+2
11:54:08.14  SWS   47.9     -     -     -  Telescope at scan limit - going to 1.8E+2
11:54:08.87  SWS   39.5     -     -     -  Telescope at scan limit - going to 1.8E+2
11:54:09.60  SWS   30.7     -     -     -  Telescope at scan limit - going to 1.8E+2
11:54:10.34  SWS   21.9     -     -     -  Telescope at scan limit - going to 1.8E+2
11:54:11.08  SWS   13.2     -     -     -  Telescope at scan limit - going to 1.8E+2
11:54:11.79  SWS    4.5     -     -     -  Telescope at scan limit - going to 1.8E+2
11:54:12.52  SWS    0.0     -     -     -  Telescope at scan limit - going to 1.8E+2
11:54:19.67  SWS      -     -     -     -  Warning: Clipping may be occurring.
11:54:27.93  SWS  180.0     -     -     -  Telescope at scan limit - going to 0.0
11:54:29.46  SWS  166.0     -     -     -  Telescope stopped.
11:55:01.93  SWS  166.0     -     -     -  Telescope sent to 154.000
11:55:24.46  SWS  154.0     -     -     -  Telescope sent to 36.400
11:55:25.60  SWS   41.2     -     -     -  Telescope stopped.
11:55:42.25  SWS   36.4     -     -     -  Telescope sent to 46.400
11:55:54.39  SWS   46.4     -     -     -  Telescope sent to 56.400
11:56:20.89  SWS   56.4     -     -     -  Telescope at scan limit - going to 1.8E+2
11:56:21.32  SWS   58.4     -     -     -  Telescope sent to 0.000
11:56:30.22  SWS  163.9     -     -     -  Telescope stopped.
11:56:40.14  SWS  163.9     -     -     -  Telescope sent to 60.000
11:56:41.30  SWS   60.0     -     -     -  Telescope stopped.
11:56:48.48  SWS   60.0     -     -     -  Telescope sent to 65.000
11:56:57.31  SWS   65.0     -     -     -  Telescope sent to 75.000
11:57:24.59  USH      -     -     -     -  Idling
11:57:24.61  SWS      -     -     -     -  Idling
11:57:24.65  SWS      -     -     -     -  Idling
11:57:24.77  LSH      -     -     -     -  Idling
11:57:26.30  LSH      -     -     -     -  Dark measurement started.
11:57:26.31  USH      -     -     -     -  Dark measurement started.
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11:57:26.34	SWS	-	-	-	-	Dark measurement started.
11:57:27.53	LSH	-	-	-	-	Warning: Abnormally bright dark measurement.
11:57:27.96	USH	-	-	-	-	Idling
11:57:28.18	SWS	-	-	-	-	Idling
11:57:31.48	SWS	-	-	-	-	Manual scene recording started.
11:57:31.48	USH	-	-	-	-	Manual scene recording started.
11:57:36.77	LSH	-	-	-	-	Idling
11:57:40.44	LSH	-	-	-	-	Manual scene recording started.
11:57:55.20	SWS	75.0	-	-	-	Telescope sent to 171.000
11:57:55.42	SWS	-	-	-	-	Warning: Clipping may be occurring.
11:57:56.35	SWS	171.0	-	-	-	Telescope stopped.
11:58:04.47	SWS	-	-	300	-	VIS int.time changed from 100ms to 300ms.
11:58:04.48	SWS	-	-	-	300	NIR int.time changed from 100ms to 300ms.
11:58:11.67	SWS	-	-	400	-	VIS int.time changed from 300ms to 400ms.
11:58:11.68	SWS	-	-	-	400	NIR int.time changed from 300ms to 400ms.
11:58:19.88	SWS	-	-	-	-	Warning: Clipping may be occurring.
11:58:24.56	SWS	-	-	-	-	Warning: Clipping may be occurring.
11:58:54.64	SWS	-	-	-	-	Warning: Clipping may be occurring.
11:59:25.23	SWS	-	-	-	-	Warning: Clipping may be occurring.
11:59:47.30	SWS	-	-	-	-	Warning: Clipping may be occurring.
11:59:57.67	SWS	-	-	100	-	VIS int.time changed from 400ms to 100ms.
11:59:57.67	SWS	-	-	-	100	NIR int.time changed from 400ms to 100ms.
12:00:19.45	SWS	171.0	-	-	-	Telescope at scan limit - going to -60.0
12:00:19.86	SWS	169.1	-	-	-	Telescope sent to -60.000
12:00:26.11	SWS	-	-	-	-	Warning: Clipping may be occurring.
12:00:39.25	SWS	-60.0	-	-	-	Telescope at scan limit - going to 1.8E+2
12:00:51.22	SWS	-	-	-	-	Warning: Clipping may be occurring.
12:00:59.71	SWS	180.0	-	-	-	Telescope at scan limit - going to -60.0
12:01:07.25	SWS	-	-	-	-	Warning: Clipping may be occurring.
12:01:12.11	SWS	35.5	-	-	-	Telescope stopped.
12:01:24.87	SWS	35.5	-	-	-	Telescope sent to 93.338
12:01:25.40	SWS	-	-	-	-	Warning: Clipping may be occurring.
12:01:25.98	SWS	93.3	-	-	-	Telescope stopped.
12:01:34.79	SWS	93.4	-	-	-	Telescope sent to 84.928
12:01:34.96	SWS	-	-	-	-	Warning: Clipping may be occurring.
12:01:44.13	SWS	-	-	75	-	VIS int.time changed from 100ms to 75ms.
12:01:44.14	SWS	-	-	-	75	NIR int.time changed from 100ms to 75ms.
12:01:51.60	SWS	84.9	-	-	-	Telescope sent to 80.938
12:02:02.63	SWS	80.9	-	-	-	Telescope sent to 85.900
12:02:15.37	SWS	85.9	-	-	-	Telescope sent to 87.000
12:02:26.45	SWS	87.0	-	-	-	Telescope sent to 86.000
12:02:30.75	SWS	86.0	-	-	-	Telescope sent to -9.000
12:02:31.90	SWS	-9.0	-	-	-	Telescope stopped.
12:02:34.49	SWS	-	-	200	-	VIS int.time changed from 75ms to 200ms.
12:02:34.49	SWS	-	-	-	200	NIR int.time changed from 75ms to 200ms.
12:02:37.34	USH	-	-	-	-	Dark measurement started.
12:02:37.44	SWS	-	-	-	-	Dark measurement started.
12:02:38.03	LSH	-	-	-	-	Dark measurement started.
12:02:38.88	USH	-	-	-	-	Manual scene recording started.
12:02:39.27	LSH	-	-	-	-	Warning: Abnormally bright dark measurement.
12:02:40.03	SWS	-	-	-	-	Manual scene recording started.
12:02:48.50	LSH	-	-	-	-	Manual scene recording started.
12:04:43.91	SWS	-	-	300	-	VIS int.time changed from 200ms to 300ms.
12:04:43.92	SWS	-	-	-	300	NIR int.time changed from 200ms to 300ms.
12:11:15.31	SWS	-	-	-	-	Warning: Clipping may be occurring.
12:11:45.11	SWS	-	-	-	-	Warning: Clipping may be occurring.
12:11:51.29	SWS	-	-	-	-	Warning: Clipping may be occurring.
12:12:23.71	SWS	-	-	-	-	Warning: Clipping may be occurring.
12:19:13.24	USH	-	-	-	-	Idling

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12:19:13.29  LSH      -      -      -      -  Idling
12:19:13.32  SWS      -      -      -      -  Idling
12:19:14.65  SWS      -      -      -      -  Dark measurement started.
12:19:14.67  LSH      -      -      -      -  Dark measurement started.
12:19:14.67  USH      -      -      -      -  Dark measurement started.
12:19:16.10  LSH      -      -      -      -  Warning: Abnormally bright dark
measurement.
12:19:16.55  USH      -      -      -      -  Idling
12:19:18.12  SWS      -      -      -      -  Idling
12:19:25.34  LSH      -      -      -      -  Idling
12:19:27.68  SWS      -      -      -      -  Manual scene recording started.
12:19:27.69  LSH      -      -      -      -  Manual scene recording started.
12:19:27.70  USH      -      -      -      -  Manual scene recording started.
12:20:44.43  SWS      -      -    400      -  VIS int.time changed from 300ms to 400ms.
12:20:44.44  SWS      -      -      -    400  NIR int.time changed from 300ms to 400ms.
12:20:48.67  SWS      -      -     40      -  VIS int.time changed from 400ms to 40ms.
12:20:48.67  SWS      -      -      -     40  NIR int.time changed from 400ms to 40ms.
12:20:52.45  SWS      -      -    400      -  VIS int.time changed from 40ms to 400ms.
12:20:52.45  SWS      -      -      -    400  NIR int.time changed from 40ms to 400ms.
12:21:20.93  SWS   -9.0      -      -      -  Telescope sent to 171.000
12:21:21.80  SWS      -      -      -      -  Warning: Clipping may be occurring.
12:21:22.66  SWS  170.7      -      -      -  Telescope stopped.
12:21:27.92  SWS      -      -     50      -  VIS int.time changed from 400ms to 50ms.
12:21:27.93  SWS      -      -      -     50  NIR int.time changed from 400ms to 50ms.
12:22:20.70  SWS      -      -    400      -  VIS int.time changed from 50ms to 400ms.
12:22:20.71  SWS      -      -      -    400  NIR int.time changed from 50ms to 400ms.
12:22:24.97  SWS      -      -    300      -  VIS int.time changed from 400ms to 300ms.
12:22:24.98  SWS      -      -      -    300  NIR int.time changed from 400ms to 300ms.
12:23:07.56  LSH      -      -      -      -  Dark measurement started.
12:23:08.79  LSH      -      -      -      -  Warning: Abnormally bright dark
measurement.
12:23:18.04  LSH      -      -      -      -  Manual scene recording started.
12:23:29.93  SWS      -      -      -      -  Warning: Clipping may be occurring.
12:23:40.72  SWS      -      -     50      -  VIS int.time changed from 300ms to 50ms.
12:23:40.73  SWS      -      -      -     50  NIR int.time changed from 300ms to 50ms.
12:23:59.66  ---      -      -      -      -  *** Over 4/8 cu1
12:24:14.41  SWS  171.0      -      -      -  Telescope sent to -9.000
12:24:16.13  SWS   -8.3      -      -      -  Telescope stopped.
12:24:25.50  SWS      -      -    300      -  VIS int.time changed from 50ms to 300ms.
12:24:25.50  SWS      -      -      -    300  NIR int.time changed from 50ms to 300ms.
12:35:08.87  SWS      -      -    400      -  VIS int.time changed from 300ms to 400ms.
12:35:08.88  SWS      -      -      -    400  NIR int.time changed from 300ms to 400ms.
12:35:14.60  USH      -      -      -      -  Idling
12:35:14.89  SWS      -      -      -      -  Idling
12:35:15.54  LSH      -      -      -      -  Idling
12:35:18.12  USH      -      -      -      -  Dark measurement started.
12:35:18.12  LSH      -      -      -      -  Dark measurement started.
12:35:18.13  SWS      -      -      -      -  Dark measurement started.
12:35:19.56  LSH      -      -      -      -  Warning: Abnormally bright dark
measurement.
12:35:19.61  USH      -      -      -      -  Idling
12:35:22.28  USH      -      -      -      -  Manual scene recording started.
12:35:23.00  SWS      -      -      -      -  Idling
12:35:28.80  LSH      -      -      -      -  Idling
12:36:20.69  SWS      -      -      -      -  Manual scene recording started.
12:36:32.09  SWS   -9.0      -      -      -  Telescope at scan limit - going to 1.8E+2
12:36:32.52  SWS   -7.1      -      -      -  Telescope sent to -60.000
12:36:33.60  SWS      -      -      -      -  Warning: Clipping may be occurring.
12:36:40.30  SWS   85.2      -      -      -  Telescope stopped.
12:36:43.58  SWS      -      -     50      -  VIS int.time changed from 400ms to 50ms.
12:36:43.59  SWS      -      -      -     50  NIR int.time changed from 400ms to 50ms.
```

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12:36:47.11  SWS   85.1     -     -     -  Telescope at scan limit - going to -60.0
12:36:47.53  SWS   83.0     -     -     -  Telescope sent to -60.000
12:36:51.27  SWS      -     -     -     -  Warning: Clipping may be occurring.
12:36:58.72  SWS  -50.0     -     -     -  Telescope stopped.
12:37:13.50  SWS  -49.9     -     -     -  Telescope at scan limit - going to 1.8E+2
12:37:13.93  SWS  -47.9     -     -     -  Telescope sent to -60.000
12:37:19.36  SWS      -     -     -     -  Warning: Clipping may be occurring.
12:37:27.71  SWS      -     -     -     -  Warning: Clipping may be occurring.
12:37:29.64  SWS  139.5     -     -     -  Telescope stopped.
12:37:32.89  SWS      -     -    40     -  VIS int.time changed from 50ms to 40ms.
12:37:32.90  SWS      -     -     -    40  NIR int.time changed from 50ms to 40ms.
12:37:34.78  SWS  139.4     -     -     -  Telescope at scan limit - going to -60.0
12:37:35.21  SWS  137.4     -     -     -  Telescope sent to -60.000
12:37:43.69  SWS      -     -     -     -  Warning: Clipping may be occurring.
12:37:51.84  SWS  -60.1     -     -     -  Telescope at scan limit - going to 1.8E+2
12:37:58.75  SWS      -     -     -     -  Warning: Clipping may be occurring.
12:38:01.31  SWS   49.3     -     -     -  Telescope stopped.
12:38:28.47  SWS   49.2     -     -     -  Telescope sent to 80.000
12:38:39.67  SWS   80.0     -     -     -  Telescope sent to 50.000
12:38:54.23  SWS   50.0     -     -     -  Telescope sent to -9.000
12:38:54.48  SWS      -     -     -     -  Warning: Clipping may be occurring.
12:38:55.39  SWS   -9.0     -     -     -  Telescope stopped.
12:39:03.75  SWS      -     -   200     -  VIS int.time changed from 40ms to 200ms.
12:39:03.76  SWS      -     -     -   200  NIR int.time changed from 40ms to 200ms.
12:39:08.96  SWS      -     -   300     -  VIS int.time changed from 200ms to 300ms.
12:39:08.97  SWS      -     -     -   300  NIR int.time changed from 200ms to 300ms.
12:39:13.33  SWS      -     -   400     -  VIS int.time changed from 300ms to 400ms.
12:39:13.34  SWS      -     -     -   400  NIR int.time changed from 300ms to 400ms.
12:39:17.78  USH      -     -     -     -  Idling
12:39:18.07  SWS      -     -     -     -  Idling
12:39:18.99  SWS      -     -     -     -  Dark measurement started.
12:39:19.00  LSH      -     -     -     -  Dark measurement started.
12:39:19.01  USH      -     -     -     -  Dark measurement started.
12:39:20.43  LSH      -     -     -     -  Warning: Abnormally bright dark
measurement.
12:39:20.86  USH      -     -     -     -  Idling
12:39:23.47  SWS      -     -     -     -  Idling
12:39:29.68  LSH      -     -     -     -  Idling
12:39:30.76  SWS      -     -     -     -  Manual scene recording started.
12:39:30.77  LSH      -     -     -     -  Manual scene recording started.
12:39:30.78  USH      -     -     -     -  Manual scene recording started.
12:44:29.79  ---      -     -     -     -  *** first run across sun
12:45:07.34  SWS      -     -     -     -  Warning: Clipping may be occurring.
12:45:13.37  SWS      -     -    75     -  VIS int.time changed from 400ms to 75ms.
12:45:13.37  SWS      -     -     -    75  NIR int.time changed from 400ms to 75ms.
12:45:53.21  ---      -     -     -     -  *** Start of Run 5.1
12:45:56.36  SWS      -     -     -     -  Idling
12:45:56.47  USH      -     -     -     -  Idling
12:45:57.37  LSH      -     -     -     -  Idling
12:45:58.31  SWS      -     -     -     -  Dark measurement started.
12:45:58.31  LSH      -     -     -     -  Dark measurement started.
12:45:58.33  USH      -     -     -     -  Dark measurement started.
12:45:59.55  SWS      -     -     -     -  Idling
12:45:59.77  LSH      -     -     -     -  Warning: Abnormally bright dark
measurement.
12:46:00.37  USH      -     -     -     -  Idling
12:46:04.25  SWS      -     -     -     -  Manual scene recording started.
12:46:06.20  USH      -     -     -     -  Manual scene recording started.
12:46:09.00  LSH      -     -     -     -  Idling
12:46:13.60  LSH      -     -     -     -  Manual scene recording started.
12:46:17.47  SWS      -     -   200     -  VIS int.time changed from 75ms to 200ms.
```

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12:46:17.48  SWS      -      -      -   200  NIR int.time changed from 75ms to 200ms.
12:46:22.44  SWS      -      -   400     -  VIS int.time changed from 200ms to 400ms.
12:46:22.46  SWS      -      -      -   400  NIR int.time changed from 200ms to 400ms.
12:47:45.99  SWS   -9.0      -      -     -  Telescope sent to -19.000
12:49:00.54  SWS  -19.0      -      -     -  Telescope sent to 9.000
12:50:15.82  SWS    9.0      -      -     -  Telescope sent to 19.000
12:51:00.86  USH      -      -      -     -  Idling
12:51:01.15  SWS      -      -      -     -  Idling
12:51:01.85  LSH      -      -      -     -  Idling
12:51:02.64  SWS      -      -      -     -  Dark measurement started.
12:51:02.65  LSH      -      -      -     -  Dark measurement started.
12:51:02.66  USH      -      -      -     -  Dark measurement started.
12:51:04.08  LSH      -      -      -     -  Warning: Abnormally bright dark
measurement.
12:51:04.50  USH      -      -      -     -  Idling
12:51:07.10  SWS      -      -      -     -  Idling
12:51:13.33  LSH      -      -      -     -  Idling
12:51:15.01  USH      -      -      -     -  Manual scene recording started.
12:51:15.01  LSH      -      -      -     -  Manual scene recording started.
12:51:15.04  SWS      -      -      -     -  Manual scene recording started.
12:51:45.43  SWS   19.0      -      -     -  Telescope sent to -9.000
12:51:53.60  ---      -      -      -     -  ***
12:52:02.13  ---      -      -      -     -  *** Start of Run into sun 5.2
12:52:22.35  SWS      -      -      -     -  Warning: Clipping may be occurring.
12:52:28.50  SWS      -      -   300     -  VIS int.time changed from 400ms to 300ms.
12:52:28.50  SWS      -      -      -   300  NIR int.time changed from 400ms to 300ms.
12:52:35.03  ---      -      -      -     -  *** Ci above
12:52:53.06  SWS      -      -   400     -  VIS int.time changed from 300ms to 400ms.
12:52:53.07  SWS      -      -      -   400  NIR int.time changed from 300ms to 400ms.
12:53:12.19  SWS   -9.0      -      -     -  Telescope sent to -19.000
12:54:16.27  SWS  -19.0      -      -     -  Telescope sent to -29.000
12:54:16.80  SWS      -      -      -     -  Warning: Clipping may be occurring.
12:54:20.07  SWS      -      -   100     -  VIS int.time changed from 400ms to 100ms.
12:54:20.08  SWS      -      -      -   100  NIR int.time changed from 400ms to 100ms.
12:55:14.09  SWS  -29.0      -      -     -  Telescope sent to 9.000
12:55:18.46  SWS      -      -   400     -  VIS int.time changed from 100ms to 400ms.
12:55:18.48  SWS      -      -      -   400  NIR int.time changed from 100ms to 400ms.
12:56:08.58  SWS    9.0      -      -     -  Telescope sent to 19.000
12:57:00.35  USH      -      -      -     -  Idling
12:57:00.54  SWS      -      -      -     -  Idling
12:57:00.93  LSH      -      -      -     -  Idling
12:57:05.45  LSH      -      -      -     -  Dark measurement started.
12:57:05.45  SWS      -      -      -     -  Dark measurement started.
12:57:05.49  USH      -      -      -     -  Dark measurement started.
12:57:06.72  LSH      -      -      -     -  Warning: Abnormally bright dark
measurement.
12:57:07.34  USH      -      -      -     -  Idling
12:57:10.14  SWS      -      -      -     -  Idling
12:57:15.96  LSH      -      -      -     -  Idling
12:57:16.96  SWS      -      -      -     -  Manual scene recording started.
12:57:16.97  LSH      -      -      -     -  Manual scene recording started.
12:57:16.98  USH      -      -      -     -  Manual scene recording started.
12:57:26.46  SWS   19.0      -      -     -  Telescope sent to -9.000
12:58:02.71  ---      -      -      -     -  *** Start of run 5.3
12:58:16.44  ---      -      -      -     -  *** Across sun
12:59:14.24  SWS   -9.0      -      -     -  Telescope sent to -19.000
13:00:23.64  SWS  -19.0      -      -     -  Telescope sent to -29.000
13:01:31.97  SWS  -29.0      -      -     -  Telescope sent to 9.000
13:02:46.92  SWS    9.0      -      -     -  Telescope sent to 19.000
13:02:57.74  ---      -      -      -     -  *** end of run 5.3
13:03:01.93  USH      -      -      -     -  Idling
```

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13:03:02.21  SWS      -     -     -     -  Idling
13:03:02.63  LSH      -     -     -     -  Idling
13:03:05.04  SWS      -     -     -     -  Dark measurement started.
13:03:05.05  LSH      -     -     -     -  Dark measurement started.
13:03:05.06  USH      -     -     -     -  Dark measurement started.
13:03:06.48  LSH      -     -     -     -  Warning: Abnormally bright dark
measurement.
13:03:06.93  USH      -     -     -     -  Idling
13:03:09.53  SWS      -     -     -     -  Idling
13:03:15.72  LSH      -     -     -     -  Idling
13:03:21.31  SWS      -     -     -     -  Manual scene recording started.
13:03:21.32  LSH      -     -     -     -  Manual scene recording started.
13:03:21.33  USH      -     -     -     -  Manual scene recording started.
13:03:45.72  ---      -     -     -     -  *** Appears to be noise on sws nir
13:03:47.80  SWS      -     -     -     -  Warning: Clipping may be occurring.
13:03:51.99  SWS   19.0     -     -     -  Telescope sent to -9.000
13:04:06.61  ---      -     -     -     -  *** start of run away from sun 5.4
13:05:14.83  SWS   -9.0     -     -     -  Telescope sent to -19.000
13:06:05.10  ---      -     -     -     -  *** coolbox being maintained at 12 degs
13:06:16.61  SWS  -19.0     -     -     -  Telescope sent to 9.000
13:06:17.07  SWS      -     -     -     -  Warning: Clipping may be occurring.
13:06:21.02  SWS      -     -   300     -  VIS int.time changed from 400ms to 300ms.
13:06:21.03  SWS      -     -     -   300  NIR int.time changed from 400ms to 300ms.
13:06:23.81  SWS      -     -   200     -  VIS int.time changed from 300ms to 200ms.
13:06:23.83  SWS      -     -     -   200  NIR int.time changed from 300ms to 200ms.
13:07:22.04  SWS    9.0     -     -     -  Telescope sent to 19.000
13:07:22.29  SWS      -     -     -     -  Warning: Clipping may be occurring.
13:07:26.06  SWS      -     -   100     -  VIS int.time changed from 200ms to 100ms.
13:07:26.09  SWS      -     -     -   100  NIR int.time changed from 200ms to 100ms.
13:07:29.13  SWS      -     -    75     -  VIS int.time changed from 100ms to 75ms.
13:07:29.15  SWS      -     -     -    75  NIR int.time changed from 100ms to 75ms.
13:07:32.88  SWS      -     -    50     -  VIS int.time changed from 75ms to 50ms.
13:07:32.89  SWS      -     -     -    50  NIR int.time changed from 75ms to 50ms.
13:08:17.81  SWS   19.0     -     -     -  Telescope sent to 29.000
13:08:17.94  SWS      -     -     -     -  Warning: Clipping may be occurring.
13:08:25.05  SWS   29.0     -     -     -  Telescope sent to 39.000
13:08:30.21  SWS      -     -    45     -  VIS int.time changed from 50ms to 45ms.
13:08:30.24  SWS      -     -     -    45  NIR int.time changed from 50ms to 45ms.
13:09:10.01  SWS      -     -     -     -  Warning: Clipping may be occurring.
13:09:12.74  ---      -     -     -     -  *** end of run
13:09:16.25  SWS   39.0     -     -     -  Telescope sent to -9.000
13:09:21.59  SWS      -     -   300     -  VIS int.time changed from 45ms to 300ms.
13:09:21.62  SWS      -     -     -   300  NIR int.time changed from 45ms to 300ms.
13:10:46.87  SWS   -9.0     -     -     -  Telescope at scan limit - going to 1.8E+2
13:10:47.33  SWS   -7.0     -     -     -  Telescope sent to -60.000
13:10:48.76  SWS      -     -     -     -  Warning: Clipping may be occurring.
13:10:53.63  SWS      -     -    35     -  VIS int.time changed from 300ms to 35ms.
13:10:53.67  SWS      -     -     -    35  NIR int.time changed from 300ms to 35ms.
13:11:02.88  SWS  179.2     -     -     -  Telescope at scan limit - going to -60.0
13:11:03.58  SWS  172.4     -     -     -  Telescope at scan limit - going to -60.0
13:11:04.35  SWS  163.2     -     -     -  Telescope at scan limit - going to -60.0
13:11:05.11  SWS  154.2     -     -     -  Telescope at scan limit - going to -60.0
13:11:05.85  SWS  145.1     -     -     -  Telescope at scan limit - going to -60.0
13:11:06.61  SWS  136.1     -     -     -  Telescope at scan limit - going to -60.0
13:11:07.38  SWS  126.8     -     -     -  Telescope at scan limit - going to -60.0
13:11:08.17  SWS  117.8     -     -     -  Telescope at scan limit - going to -60.0
13:11:08.92  SWS  108.5     -     -     -  Telescope at scan limit - going to -60.0
13:11:09.67  SWS   99.5     -     -     -  Telescope at scan limit - going to -60.0
13:11:10.44  SWS   90.4     -     -     -  Telescope at scan limit - going to -60.0
13:11:11.14  SWS   81.3     -     -     -  Telescope at scan limit - going to -60.0
13:11:11.89  SWS   72.7     -     -     -  Telescope at scan limit - going to -60.0
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13:11:12.66  SWS   63.6     -     -     -  Telescope at scan limit - going to -60.0
13:11:13.41  SWS   54.6     -     -     -  Telescope at scan limit - going to 1.8E+2
13:11:14.15  SWS   45.6     -     -     -  Telescope at scan limit - going to 1.8E+2
13:11:14.71  SWS      -     -     -     -  Warning: Clipping may be occurring.
13:11:14.86  SWS   36.7     -     -     -  Telescope at scan limit - going to 1.8E+2
13:11:15.63  SWS   28.1     -     -     -  Telescope at scan limit - going to 1.8E+2
13:11:16.37  SWS   19.1     -     -     -  Telescope at scan limit - going to 1.8E+2
13:11:17.12  SWS   10.1     -     -     -  Telescope at scan limit - going to 1.8E+2
13:11:17.87  SWS    1.2     -     -     -  Telescope at scan limit - going to 1.8E+2
13:11:18.62  SWS   -8.0     -     -     -  Telescope at scan limit - going to 1.8E+2
13:11:19.39  SWS  -17.1     -     -     -  Telescope at scan limit - going to 1.8E+2
13:11:20.16  SWS  -26.1     -     -     -  Telescope at scan limit - going to 1.8E+2
13:11:20.92  SWS  -35.4     -     -     -  Telescope at scan limit - going to 1.8E+2
13:11:21.67  SWS  -44.4     -     -     -  Telescope at scan limit - going to 1.8E+2
13:11:22.43  SWS  -53.5     -     -     -  Telescope at scan limit - going to 1.8E+2
13:11:23.18  SWS  -60.1     -     -     -  Telescope at scan limit - going to 1.8E+2
13:11:28.44  SWS      -     -    25     -  VIS int.time changed from 35ms to 25ms.
13:11:28.48  SWS      -     -     -    25  NIR int.time changed from 35ms to 25ms.
13:11:30.36  SWS      -     -     -     -  Warning: Clipping may be occurring.
13:11:43.45  SWS  179.6     -     -     -  Telescope at scan limit - going to -60.0
13:11:55.68  SWS      -     -     -     -  Warning: Clipping may be occurring.
13:12:04.22  SWS  -60.1     -     -     -  Telescope at scan limit - going to 1.8E+2
13:12:11.37  SWS      -     -     -     -  Warning: Clipping may be occurring.
13:12:24.44  SWS  179.0     -     -     -  Telescope at scan limit - going to -60.0
13:12:36.47  SWS      -     -     -     -  Warning: Clipping may be occurring.
13:12:43.17  SWS      -     -    15     -  VIS int.time changed from 25ms to 15ms.
13:12:43.20  SWS      -     -     -    15  NIR int.time changed from 25ms to 15ms.
13:12:44.67  SWS  -59.0     -     -     -  Telescope at scan limit - going to 1.8E+2
13:12:52.21  SWS      -     -     -     -  Warning: Clipping may be occurring.
13:12:59.73  SWS      -     -     5     -  VIS int.time changed from 15ms to 5ms.
13:12:59.76  SWS      -     -     -     5  NIR int.time changed from 15ms to 5ms.
13:13:05.07  SWS  180.1     -     -     -  Telescope at scan limit - going to -60.0
13:13:17.44  SWS      -     -     -     -  Warning: Clipping may be occurring.
13:13:25.81  SWS  -60.1     -     -     -  Telescope at scan limit - going to 1.8E+2
13:13:28.56  SWS  -31.5     -     -     -  Telescope stopped.
13:13:37.66  SWS  -31.6     -     -     -  Telescope sent to -9.000
13:13:43.51  SWS      -     -   300     -  VIS int.time changed from 5ms to 300ms.
13:13:43.53  SWS      -     -     -   300  NIR int.time changed from 5ms to 300ms.
13:13:46.99  SWS      -     -     -     -  Warning: Clipping may be occurring.
13:13:48.23  SWS      -     -   200     -  VIS int.time changed from 300ms to 200ms.
13:13:48.24  SWS      -     -     -   200  NIR int.time changed from 300ms to 200ms.
13:13:50.84  LSH      -     -     -     -  Idling
13:13:50.88  USH      -     -     -     -  Idling
13:13:51.01  SWS      -     -     -     -  Idling
13:13:54.16  LSH      -     -     -     -  Dark measurement started.
13:13:54.16  SWS      -     -     -     -  Dark measurement started.
13:13:54.21  USH      -     -     -     -  Dark measurement started.
13:13:55.80  LSH      -     -     -     -  Warning: Abnormally bright dark
measurement.
13:13:56.45  USH      -     -     -     -  Idling
13:13:57.07  SWS      -     -     -     -  Idling
13:14:02.63  SWS      -     -     -     -  Manual scene recording started.
13:14:04.25  USH      -     -     -     -  Manual scene recording started.
13:14:05.05  LSH      -     -     -     -  Idling
13:14:07.75  LSH      -     -     -     -  Manual scene recording started.
13:15:36.30  SWS      -     -     -     -  Warning: Clipping may be occurring.
13:15:43.73  SWS      -     -   100     -  VIS int.time changed from 200ms to 100ms.
13:15:43.76  SWS      -     -     -   100  NIR int.time changed from 200ms to 100ms.
13:16:39.72  SWS      -     -     -     -  Warning: Clipping may be occurring.
13:17:21.84  SWS      -     -     -     -  Warning: Clipping may be occurring.
13:21:48.76  SWS      -     -   200     -  VIS int.time changed from 100ms to 200ms.
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13:21:48.80  SWS      -      -      -   200  NIR int.time changed from 100ms to 200ms.
13:21:50.43  USH      -      -      -     -  Idling
13:21:50.48  SWS      -      -      -     -  Idling
13:21:50.50  LSH      -      -      -     -  Idling
13:21:50.53  SWS      -      -      -     -  Idling
13:21:56.70  SWS      -      -      -     -  Dark measurement started.
13:21:56.71  USH      -      -      -     -  Dark measurement started.
13:21:56.73  LSH      -      -      -     -  Dark measurement started.
13:21:58.34  LSH      -      -      -     -  Warning: Abnormally bright dark
measurement.
13:21:58.37  USH      -      -      -     -  Idling
13:21:59.19  SWS      -      -      -     -  Idling
13:22:07.59  LSH      -      -      -     -  Idling
13:22:09.62  SWS      -      -      -     -  Manual scene recording started.
13:22:09.62  LSH      -      -      -     -  Manual scene recording started.
13:22:09.65  USH      -      -      -     -  Manual scene recording started.
13:22:16.31  SWS      -      -      -     -  Warning: Clipping may be occurring.
13:22:17.83  SWS      -      -     75     -  VIS int.time changed from 200ms to 75ms.
13:22:17.85  SWS      -      -      -    75  NIR int.time changed from 200ms to 75ms.
13:25:53.30  SWS      -      -    200     -  VIS int.time changed from 75ms to 200ms.
13:25:53.33  SWS      -      -      -   200  NIR int.time changed from 75ms to 200ms.
13:29:18.05  SWS      -      -      -     -  Warning: Clipping may be occurring.
13:29:20.53  SWS      -      -    100     -  VIS int.time changed from 200ms to 100ms.
13:29:20.54  SWS      -      -      -   100  NIR int.time changed from 200ms to 100ms.
13:29:34.12  SWS      -      -      -     -  Warning: Clipping may be occurring.
13:29:42.15  SWS      -      -     75     -  VIS int.time changed from 100ms to 75ms.
13:29:42.16  SWS      -      -      -    75  NIR int.time changed from 100ms to 75ms.
13:33:00.34  USH      -      -      -     -  Idling
13:33:00.38  SWS      -      -      -     -  Idling
13:33:00.42  SWS      -      -      -     -  Idling
13:33:00.64  LSH      -      -      -     -  Idling
13:33:05.28  USH      -      -      -     -  Dark measurement started.
13:33:05.29  LSH      -      -      -     -  Dark measurement started.
13:33:05.30  SWS      -      -      -     -  Dark measurement started.
13:33:06.73  LSH      -      -      -     -  Warning: Abnormally bright dark
measurement.
13:33:06.77  USH      -      -      -     -  Idling
13:33:06.93  SWS      -      -      -     -  Idling
13:33:14.48  SWS      -      -      -     -  Manual scene recording started.
13:33:15.98  LSH      -      -      -     -  Idling
13:33:16.84  USH      -      -      -     -  Manual scene recording started.
13:33:18.75  LSH      -      -      -     -  Manual scene recording started.
13:33:24.34  SWS      -      -    200     -  VIS int.time changed from 75ms to 200ms.
13:33:24.35  SWS      -      -      -   200  NIR int.time changed from 75ms to 200ms.
13:33:28.58  SWS      -      -    400     -  VIS int.time changed from 200ms to 400ms.
13:33:28.61  SWS      -      -      -   400  NIR int.time changed from 200ms to 400ms.
13:48:00.72  SWS      -      -   1000     -  VIS int.time changed from 400ms to 1000ms.
13:48:00.75  SWS      -      -      -  1000  NIR int.time changed from 400ms to 1000ms.
13:48:07.93  USH      -      -      -     -  Idling
13:48:08.42  SWS      -      -      -     -  Idling
13:48:08.66  LSH      -      -      -     -  Idling
13:48:11.10  USH      -      -      -     -  Dark measurement started.
13:48:11.13  LSH      -      -      -     -  Dark measurement started.
13:48:11.14  SWS      -      -      -     -  Dark measurement started.
13:48:12.55  LSH      -      -      -     -  Warning: Abnormally bright dark
measurement.
13:48:12.58  USH      -      -      -     -  Idling
13:48:21.84  LSH      -      -      -     -  Idling
13:48:21.99  SWS      -      -      -     -  Idling
13:48:27.15  SWS      -      -      -     -  Manual scene recording started.
13:48:29.16  USH      -      -      -     -  Manual scene recording started.
```

```
13:48:31.28  LSH      -      -      -      -  Manual scene recording started.
13:56:24.52  USH      -      -      -      -  Idling
13:56:24.65  LSH      -      -      -      -  Idling
13:56:24.69  SWS      -      -      -      -  Idling
13:56:28.15  USH      -      -      -      -  Dark measurement started.
13:56:28.17  LSH      -      -      -      -  Dark measurement started.
13:56:28.18  SWS      -      -      -      -  Dark measurement started.
13:56:29.59  LSH      -      -      -      -  Warning: Abnormally bright dark
measurement.
13:56:29.63  USH      -      -      -      -  Idling
13:56:38.88  LSH      -      -      -      -  Idling
13:56:38.97  USH      -      -      -      -  Manual scene recording started.
13:56:39.04  SWS      -      -      -      -  Idling
13:56:42.69  SWS      -      -      -      -  Manual scene recording started.
13:56:45.91  LSH      -      -      -      -  Manual scene recording started.
13:58:01.77  SWS      -      -      -      -  Warning: Clipping may be occurring.
13:58:14.50  SWS      -      -    400      -  VIS int.time changed from 1000ms to 400ms.
13:58:14.52  SWS      -      -      -    400  NIR int.time changed from 1000ms to 400ms.
14:08:12.74  USH      -      -      -      -  Idling
14:08:12.91  SWS      -      -      -      -  Idling
14:08:13.09  LSH      -      -      -      -  Idling
14:08:13.99  LSH      -      -      -      -  Dark measurement started.
14:08:13.99  USH      -      -      -      -  Dark measurement started.
14:08:14.05  SWS      -      -      -      -  Dark measurement started.
14:08:15.27  LSH      -      -      -      -  Warning: Abnormally bright dark
measurement.
14:08:15.71  USH      -      -      -      -  Idling
14:08:17.27  USH      -      -      -      -  Manual scene recording started.
14:08:18.90  SWS      -      -      -      -  Idling
14:08:19.54  SWS      -      -      -      -  Manual scene recording started.
14:08:24.56  LSH      -      -      -      -  Idling
14:08:26.49  LSH      -      -      -      -  Manual scene recording started.
14:18:28.92  USH      -      -      -      -  Idling
14:18:29.09  SWS      -      -      -      -  Idling
14:18:29.50  LSH      -      -      -      -  Idling
14:18:33.75  SWS      -      -      -      -  Dark measurement started.
14:18:33.75  LSH      -      -      -      -  Dark measurement started.
14:18:33.76  USH      -      -      -      -  Dark measurement started.
14:18:35.19  LSH      -      -      -      -  Warning: Abnormally bright dark
measurement.
14:18:35.61  USH      -      -      -      -  Idling
14:18:38.22  SWS      -      -      -      -  Idling
14:18:41.65  SWS      -      -      -      -  Manual scene recording started.
14:18:43.31  USH      -      -      -      -  Manual scene recording started.
14:18:44.45  LSH      -      -      -      -  Idling
14:18:46.83  LSH      -      -      -      -  Manual scene recording started.
14:19:28.18  SWS      -      -      -      -  Warning: Clipping may be occurring.
14:19:36.22  ---      -      -      -      -  *** entering ci1
14:19:41.47  SWS      -      -     40      -  VIS int.time changed from 400ms to 40ms.
14:19:41.50  SWS      -      -      -     40  NIR int.time changed from 400ms to 40ms.
14:20:55.27  LSH      -      -      -      -  Warning: Clipping may be occurring.
14:28:07.93  LSH      -      -      -      -  Warning: Clipping may be occurring.
14:31:06.36  ---      -      -      -      -
14:31:06.39  ---      -      -      -      -  +++ SOFTWARE START/RESTART +++
14:31:06.39  ---      -      -      -      -  +++ hh:mm:ss.ff / Instr / Posn / Period /
tVIS/ tNIR / Comment +++
14:31:06.40  ---      -      -      -      -  +++ Flight no. B394b
14:31:06.42  ---      -      -      -      -
14:31:58.49  ---      -      -      -      -  *** not sure why vi stopped - reopened to
shut down properly
14:32:05.66  SWS      -      -      -      -  Telescope motor initialised.
```

```
14:32:14.04  SWS      -     -     -     -  Telescope disabled.
14:32:23.63  SWS      -     -     -     -  Telescope motor initialised.
14:32:34.95  SWS    0.0     -     -     -  Telescope sent to 123.391
14:32:36.67  SWS  123.4     -     -     -  Telescope stopped.
14:32:55.37  ---      -     -     -     -  *** sws head moved for landing
14:33:06.72  SWS      -     -     -     -  Telescope disabled.
14:33:07.94  ---      -     -     -     -  *** SHUTTING DOWN...
14:33:08.21  SWS      -     -     -     -  Telescope motor control quit.
```

ARIES flight log

Flight: B394 | page 1 of 4

Date: 13-8-8 | Operator(s): VANCE | Res: [illegible] | Gain A: 2 B: 2

Loc./Notes: Instrument test flight

Scans: *either "[IGMs]X[co-adds]", or "[stop DRS time]" if in start/stop, or "[macro name]".* ***View:*** *mirror angle.*

DRS time	Flt ptrn	Scans	View	Shtr	HBB	CBB	Comments
0757	Aries connected – pointing head off.						
	pointing on. H set to 40, C to 20.						
	All left on during briefing						
0820	———				69	42	(20 & 40 set)
082351	pan	CHCal	–	C	71	31	OK
0843	COH Restarted to pick up new script						
084653	pan	4.	–	C/O	70	30	15 sec cal, 15 sec Z, 15 sec cal, 30 " ,30 " ,30 " 60 " ,60 " ,60 "
0854	aborted	Script viewing nadir?!					
090008	pan	4.	–	O	56	28	Still N!
0939	"	pointing Hd restarted					
094038	"	4					Still measuring N, not Z.
		Confirmed that Z on screen is Z on mirror					
		with shutter					
094850	"	1. Cal	–	C	71	31	OK
095048	Leaving	3. Nadir		C	71	31	OK.
Aries disconnected to write new scripts							
1017	– no HSK!						
1018	restarting COH						
1019	– OK – no – "shade" problem.						
1021	restart COH – no HSK, reconnect, OK.						
102200	FL180 Transit	5. Z	–	C/O	71	31	Hazy above. 1 min Cal, 3 min Z, 1 min Cal.
							Hung. Killed 1024.
102430	"	5. Z Cal		O	71	31	Hot shroud OK. Script stopped
							after cal 1!
102840	"	5. Z+Cals		O	71	31	T = –21.2°C
1029	P ↓	just as Z started!					
103646	transit	1. Cal	–	O	71	31	looks clean above Sc offby Ca/Sc below
1038	FL010	2 5	360×1	O	71	30	descending?
1041		1. Cal	–	C/O	71	30	into cloud during Cal
104715		4.					checking. Still diff!

4 2520 2400 3 28

ARIES flight log

Flight: RB394 | page 2 of 4

Date: | Operator(s): | Res: | Gain A: B:

Loc./Notes:

Scans: *either "[IGMs]X[co-adds]", or "[stop DRS time]" if in start/stop, or "[macro name]".* ***View:*** *mirror angle.*

DRS time	Flt ptrn	Scans	View	Shtr	HBB	CBB	Comments
110148	Script checking — duff.						
110505	"		(C)				duff.
1132	P 4						
1144	Cannot get scripts to compile so will use CAVIAR/IDL						
	scripts & abort.		Scripts:				7. 1 min view & cals.
							8. 30 sec. " "
							9. 15 " " & cals
114746		1×15	C	0			
		"	H				
		"	Z				oops
		"	C				
		"	H				
4934		15×1	Z				
		1×15	C				
		"	H				
4953		1×30	C				
5014			H				
5040		30×1	Z	0	71	31	
		1×30	C				
5143		"	H				
115250	FL080	1×60	C	0	71	30	
			H				
1154	"	240×1	Z	0	71	30	Clean above to the eye.
115617	"	1×60	C	0	70	31	
115701	"	"	H	0	71	30	" E.R.@ 115731 (3.01)
122236	R FL280	1×15	C				T=-45, T
			H				
2317		15×1	Z				
2328		1×15	C				
2346		"	H				
2412		1×30	C				

Couldn't find these files at time. Copied from memory stick & used from 1245

ARIES flight log

Flight: B394 | page 3 of 4

Date: 13-8-8 | Operator(s): VANCE | Res: | Gain A: B:

Loc./Notes:

Scans: *either "[IGMs]X[co-adds]", or "[stop DRS time]" if in start/stop, or "[macro name]".* ***View:*** *mirror angle.*

DRS time	Flt ptrn	Scans	View	Shtr	HBB	CBB	Comments
122430	FL280		H				
122502		30x1	Z	O	71	31	
122535		1x30	C	O	71	30	Clean above
122601		1x30	H				
122630		1x60	C	O	71	31	
122721		"	H	O			
122755		120x1		O			
122905		1x60	C	O			
2943		1x60	H	O	71	30	H shroud 69.9
3101		120x1	Z	O	71	30	Realtime display rubbish
123214		1x60	C	O	71	31	Still clean above.
123248		"	H	O	71	30	in turn
3433		1x15	C				
~~3~~		"	H				
3503		30x1	Z				
3538		1x15	C				
3552		1x15	H				
123616		1x30	C				
3636		1x30	H	O	70	31	
3705		60x1	~~O~~I	O	71	30	
123748		1x30	C				
3808		1x30	H	O	71	31	H shroud 69.9
3931		1x60	C	O	70	30	
4008		"	H	O	70	30	
124053		120x1	Z	O	71	30	Still clean above
124203		1x60	C	O	70	31	
124238	FL280	1x60	H	O	71	31	
1245		9. cav. 15					abort 124651
124712	"	8. Cav. 30			71	30	" 124908
124923	"	7. Cav. 60		O			" 125037. Clean↑
125144	"	9. Cav. 15s.		O	71	31	" 125259 ~~Cont~~ G↑?

inter sun,

ARIES flight log

Flight: B394 | page 4 of 4

Date: | Operator(s): | Res: | Gain A: B:

Loc./Notes:

Scans: *either "[IGMs]X[co-adds]", or "[stop DRS time]" if in start/stop, or "[macro name]".* ***View:*** *mirror angle.*

DRS time	Flt ptrn	Scans	View	Shtr	HBB	CBB	Comments
125313	FL280	8. Cavia	30	0	71	30	aborted 125405
125415		7. Cavia	1	0	71	30	aborted 125632 on CBB
125948	" R5-3	9. Cavia	15	0	70	30	aborted 125910?
125928	"	8. Cavia	30	0	71	31	aborted 130125? HBB 5 at 71
130130	"	7. Cavia	60	0	71	31	T = -45 aborted B0253 EOR
130403	R5-4	9. cavia	15	0	70	31	aborted 0514
	"	8. Cavia	30				
130525	"	7. ? Cavia	30	0			abort 120723
120738	"	7. Cavia	60	0	71	31	" 130909 into yaws.
1334	FL315	PA T = -52, T_d = -50! Hot shroud is 70. fool, of course GE is lagging!					
134614	R6-1 FL	9. Cavia	15	0	71	31	HBB shroud still lagging.
		During profile shutter was open & mirror at Z & T window dropped to ~9°C. On turning mirror to HBB saw rapid change in temp & window & shape of raw rad. plot. Pictures taken.					
135618	ER6-1	———		0	70	31	abo Script aborted. EOR
135730	~~R6-2~~	1. Acal -		0	70	30	HBB shroud 70. in Turn
135846	R6-2	2. Vsrab Z		0	71	31	looks nice & clean above. T=-50°C
141130	ER6-2	continuing to measure in gentle turn to port					
141544		Script aborted. Aries off.					

may have screwed up here.

Flight: B394

KEY

- Not Fitted
- Fitted, Not Operated
- Duff Data
- Minor Problems
- OK

Thermometers
- Cabin Temperature:
- Heimann:
- Deiced Temp:
- Non-deiced Temp:

Hygrometers
- FWVS:
- Buck CR2:
- General Eastern:
- Johnson Williams:
- Nevzorov:
- Total Water Probe:

Cameras
- Downward Facing:
- Forward Facing:
- Rearward Facing:
- Upward Facing:

Navigation + Aircraft
- Cruciform GPS:
- GIN Applanix:
- INU Honeywell:
- Radar Altimeter:
- RVSM IAS:
- RVSM Static Pressure:
- XR5 GPS:

Misc Core
- AMTG:
- AVAPS:
- Cabin Pressure:
- Fax machine:
- Printer:
- S9 Static Pressure:
- Satcom C:
- Satcom H:
- Turb Centre-Static:
- Turb Left Right:
- Turb Up-Down:
- Turb Horizontal Chk:
- Turb Vertical Chk:
- Weather Radar:

DLUs:
- DLU AERACK:
- DLU BBR Lower:
- DLU BBR Upper:
- DLU Core Chem:
- DLU Core Consoles:
- DLU Port Aft:
- DLU Port Fwd:
- DLU Stbd Fwd:

Radiometers
Lower:
- BBR (clear) Lower:
- BBR (IR) Lower:
- BBR (red) Lower:

Upper:
- BBR (clear) Upper:
- BBR (IR) Upper:
- BBR (red) Upper:

- ARIES:
- DEIMOS:
- IR Camera:
- JNO2 Lower:
- JNO2 Upper:
- JO1D Lower:
- JO1D Upper:
- MARSS:
- SHIMS Lower:
- SHIMS Upper:
- SWS:
- TAFTS:

Cloud Probes
- 2DC:
- 2DP:
- FFSSP:
- PCASP:
- 2DS:
- ADA:
- CAPS:
- CCN:
- CDP:
- CIP 100:
- CIP 25:
- CPI:
- CVI:
- SID1:
- SID2:

Aerosol
- CPC 3025A:
- CPC 3786 H2O:
- Filters 47mm:
- Filters 90mm:
- Neph - Dry:
- Neph - Wet:
- PSAP:
- AMS:
- CPC 3025 (AMS)
- INC:
- VACC:
- CPC 3010A (CVI):
- SP2:
- UHSAS:

Chemistry
- CO Aerolaser 5002:
- NOx TE42C:
- Ozone TE49C:
- Ozone TE49:
- SO2 TE43C:
- TDLAS (NIR) CH4:
- TDLAS (NIR) CO2:
- FAGE:
- Formaldehyde:
- NOx FAAM:
- NOxy:
- ORAC:
- PAN:
- PERCA:
- Peroxide:
- PTRMS:
- TDLAS (1C):
- WAS Bags:
- WAS Bottles:

Misc Non-Core
- CASI/ATM:
- LIDAR:
- LTI:
- SAW Hygrometer:

Report Created 02/09/2008 14:12:30

Last Updated: 20/08/2008 12:21:18

Faults / Incidents Log

Flight No. B394
Date: 13/8/08

Instruments

1.

Non Core:

CVI only accessing 4 out of 6 Horace parameters. Tried restarting H_CVI – no help.
SID2 failed at 1215z.
Data hard disc failure on FFSSP

Aircraft

ISDN Emails
Nil

Satcom-H Calls
Nil

Issues

Post Flight - Turb Probe Water Traps

1. Indicate Amount of Water: a) Nil b) 1-2 drops c) ¼ full or more d) Ice present
2. Emptied by:
3. Dried by

MISSING LOG SHEETS:

The following log sheets are not available for flight B394:

Log	Reason
Pre-flighter log	No log available
Cloud Physics Processing	Processing yet to be completed.
Wet Neph	Awaiting log from instrument operator
Core Chemistry / TDLAS	no In Flight log except in cases of instrument problems
CPI log	CPI operator does not create a log sheet
FWVS	FWVS operator does not create a log sheet
TAFTS	FWVS operator does not create a log sheet

AMS - not yet fitted

Document control

Revision	Date	Author	Comments
r0	08 Sep 2009	Doug Anderson	Initial version missing the above noted logs
r1			
r2			

VIDEO RECORDINGS:

The following video recordings in avi format should be available at the BADC :

faam-video-dfc_faam_20080813_r0_b394_103112_1hz.avi
faam-video-dfc_faam_20080813_r0_b394_113112_1hz.avi
faam-video-dfc_faam_20080813_r0_b394_123112_1hz.avi
faam-video-dfc_faam_20080813_r0_b394_133112_1hz.avi
faam-video-dfc_faam_20080813_r0_b394_143112_1hz.avi

faam-video-rfc_faam_20080813_r0_b394_103051_1hz.avi
faam-video-rfc_faam_20080813_r0_b394_113051_1hz.avi
faam-video-rfc_faam_20080813_r0_b394_123051_1hz.avi
faam-video-rfc_faam_20080813_r0_b394_133051_1hz.avi
faam-video-rfc_faam_20080813_r0_b394_143051_1hz.avi

faam-video-ffc_faam_20080813_r0_b394_103047_1hz.avi
faam-video-ffc_faam_20080813_r0_b394_113047_1hz.avi
faam-video-ffc_faam_20080813_r0_b394_123047_1hz.avi
faam-video-ffc_faam_20080813_r0_b394_133047_1hz.avi
faam-video-ffc_faam_20080813_r0_b394_143047_1hz.avi

faam-video-ufc_faam_20080813_r0_b394_103055_1hz.avi
faam-video-ufc_faam_20080813_r0_b394_113055_1hz.avi
faam-video-ufc_faam_20080813_r0_b394_123055_1hz.avi
faam-video-ufc_faam_20080813_r0_b394_133055_1hz.avi
faam-video-ufc_faam_20080813_r0_b394_143055_1hz.avi

No Digital8 video recordings were made on this flight.